METHODS AND AIDS IN GEOGRAPHY

CHARLES F. KING

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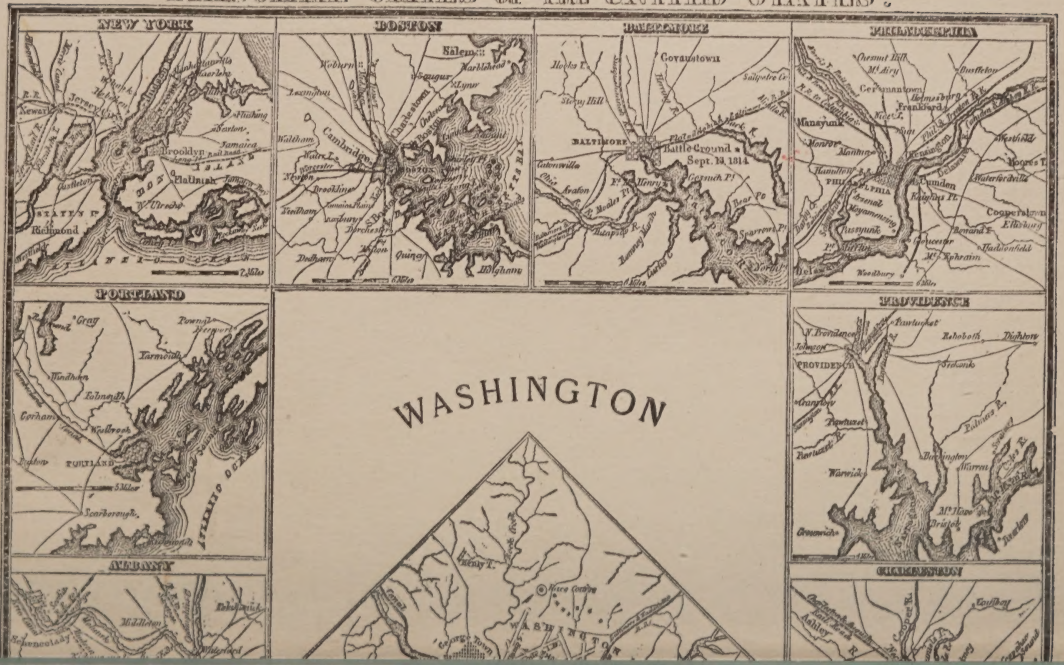

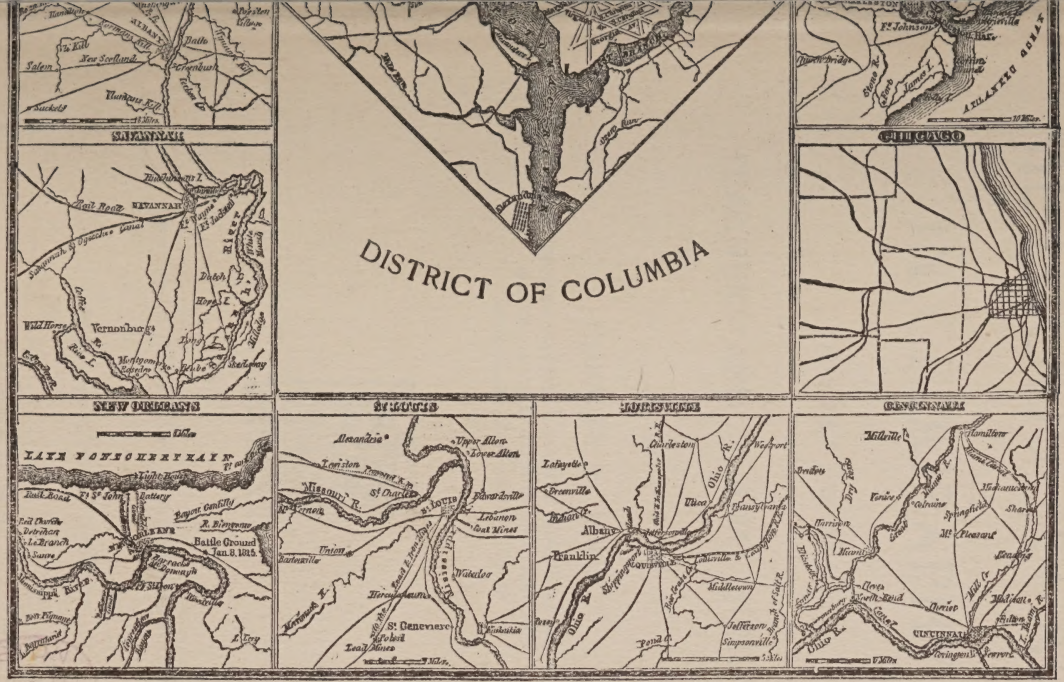

[These outlines somewhat simplified may be quickly sketched upon the board, and the attention of the pupils called to the position and commercial advantages of each city. See p. 341.]

METHODS AND AIDS IN GEOGRAPHY

FOR THE USE OF

TEACHERS AND NORMAL SCHOOLS

BY

CHARLES F. KING

PRESIDENT OF NATIONAL SUMMER SCHOOL OF METHODS
MASTER OF DEARBORN SCHOOL BOSTON
AUTHOR OF KING'S GEOGRAPHIES

WITH NUMEROUS ILLUSTRATIONS

New and Revised Edition

BOSTON 1910
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Oct. 30. 1911
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PRESSWORK BY ROCKWELL AND CHURCHILL.

WHEN GEOGRAPHY ceases to be a lifeless aggregate of unorganized facts, and deals with the earth as a true organization, — a world capable of constant development, carrying in its bosom the seeds of the future, to germinate and unfold age after age, — it first attains the unity and wholeness of a science, and shows that it grows from a living root; it becomes capable of systematic exposition, and takes its true place in the circle of sister sciences. — RITTER.

THE POWER OF TEACHING A LITTLE, depends upon the power of knowing a great deal.

GOOD METHODS OF TEACHING are important, but they cannot supply the want of ability in the teacher. The Socratic method is good; but a Socrates behind the teacher's desk, to ask the questions, is better. — BALLIET.

BOOKS BY CHARLES F. KING

Principal Dearborn Grammar School, Boston.

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PREFACE TO THE FIRST EDITION

THE greatest enterprises of the present day are the result of accurate geographical knowledge. The finest exhibitions of heroism and bravery and suffering have been endured amid frigid cold or tropic heat, in order to enlarge the world's geographical information; and the most exquisite pleasure enjoyed by educated people is found in real geographical study while travelling.

In the different German universities, there are to-day twelve regular professors of geography. France has twenty-five geographical societies, with a membership of over twenty thousand. England has five societies; Germany, two; and America, one. At the annual meetings of these numerous societies, and in the one hundred and twenty periodicals published by them, the growing importance of geographical study has been eloquently discussed, and the strongest criticisms expressed in reference to the methods and text-books so universally employed in teaching the subject.

Geography is the most fascinating, or the least attractive, study in the common-school curriculum, according to the method and books employed in teaching it. The inferior instruction given in this subject when the author attended the district school, and his own failures in the same line

when he began his life-work in New Bedford in 1867, have led, by a deep-felt necessity, to long and earnest study, and to continued efforts for better methods and more satisfactory results.

The object of this book is to give the teaching fraternity the results of these twenty years of experience in the school-room.

Ideas and facts have been gathered, by much patient research, from many available sources. Most of the books thus freely consulted are mentioned at the beginning of the chapters. Teachers are urged to purchase these books as fast as means will allow, that they may have the satisfaction of more extended information, and consequently greater teaching power.

It gives the author great pleasure to acknowledge here special assistance and suggestion from Misses O'Neil and Murphy, Lewis School, Roxbury; from Professor Charles F. Adams, Massachusetts State Normal School, Worcester; from Professor Thomas M. Balliet, superintendent of schools, Springfield; from Dr. S. T. Dutton, superintendent of schools, New Haven; and from many of the officials in the Boston Public Library, among whom particular mention should be made of Mr. A. P. C. Griffin, whose accurate memory, and wonderful knowledge of books, have frequently been of the greatest assistance.

To my friend and fellow-worker, Mr. M. T. Pritchard, master of the Comins School, Boston, Mass., I am greatly indebted for many valuable suggestions, and for the careful reading of both the manuscript and the proofs.

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INTRODUCTION

A WORD or two, at this point, in reference to the wisest use of the book, may not be amiss. The different chapters may be classified under the following heads: —

1. *How* to teach geography.
2. *What* to teach in geography.
3. *Where* to find valuable geographical knowledge.

In order to obtain the greatest benefits possible from the contents, it is well not to attempt to follow with blind confidence all the methods recommended in the first part. Although these methods have been employed in my own school, or by trusted teachers in other schools, and all have been found to be excellent where used, yet your circumstances may be very different. It is your privilege, as well as your duty, to select, or find out by experiment, the methods best adapted to *your* own schoolroom. Modify these methods, if necessary, so as to make them really your own, and then success will invariably follow.

If your school is not well graded, or if your committee, superintendent, or principal requires certain results, you may need to modify your use of the book to correspond. It is believed, however, that nearly all the methods, slightly changed to meet different conditions, will be found to be most helpful to any teacher of geography.

Under the head of *What* to teach, extensive statistical information has been given, NOT TO BE MEMORIZED, but simply as *material* with which teacher and pupil can form comparisons, from which they can draw conclusions, and with which they can construct a better geography than the ordinary text-book provides. In this way pupils will unconsciously learn and remember all the necessary facts.

In Chap. XVIII., on Commercial Geography, and in Chaps. XIX. and XX., devoted to Sources of Information and Illustration, a large amount of varied information, not easily accessible, has been presented, in order to give a wide range of selection. The wise teacher will daily choose from these chapters such additional information as will make the lesson more interesting and profitable. Many of the books mentioned in the volume ought to be found in your own town-library, under each author's name; or they can probably be purchased at the nearest bookstore; or, if you prefer, the publishers of this volume will cheerfully furnish information, and fill orders for any book mentioned.

The headings to the chapters will frequently be serviceable in review work, and the table of contents and index can be used in a similar manner with normal classes. In addition to the usual style, the publishers have bound the book in flexible covers, so that it will easily lie open upon the teacher's desk, and be more readily used. The illustrations are of a practical, rather than an artistic, nature, and are such as can be readily reproduced in crayon on the blackboard. Most of them have been drawn by my own pupils, and reproduced by photography.

Many of the historical and descriptive references in this book apply to New England; but they are merely sug-

gestive, and the wise teacher can readily adapt them to suit other localities.

The word "geography" is a comprehensive term, and admits of many subdivisions, — physical, political, historical, descriptive, ethnographical, mathematical, etc. Each of these parts is a science in itself, and has its special field for investigation and development. In all schools for primary and secondary instruction, there need be but little done in any one of the particular subdivisions. What is required is a judicious blending of all into an harmonious whole, in which no subordination, no prominence, is given to any part of the all-embracing science.

In some recently published manuals, undue — and for practical purposes unwise — prominence has been given to *physical geography*, seemingly founded on the definition that "geography is a description of the earth's surface;" whereas the educational spirit of the age requires the addition of the words, "and its inhabitants," to the trite and much-abused definition.

In the following pages, the endeavor has been made to suggest some methods for teaching geography comprehensively but not exhaustively. Hence only a *few* of the simple and interesting facts of physical geography are mentioned in the Five Years' Course laid out in Chapters XI. and XII.

In this matter our experience, as set forth in this volume, happily agrees with Ritter, Guyot, Reclus, Geikie, Crocker, Redway, Frye, McMurry, and Carver.

INTRODUCTION TO TEACHERS' EDITION.

METHODS AND AIDS has been most generously received by the teachers of this country. Nine editions have been issued, and the demand is as great at the present time as it was when the first edition came from the press. To meet this demand, and to introduce changes necessitated by the census of 1900, a new and popular edition has been prepared. In this edition thousands of changes have been made, titles to new books given, new devices and approved methods introduced, in order to bring the book up to the present day.

The methods advocated in this volume are the result of many years of instruction in the class-room; they grew up out of the needs for a broader scope to the work of instructing pupils in a knowledge of the world we live in.

Let no teacher, however, for a moment imagine that he must acquire a vast amount of apparatus and several hundred books on geography before he begins to teach topically and illustratively, but rather let him make a beginning at once with the few helps in reach, and with little or no expense.

It was in this simple, humble way that the writer began forty years ago. The results were so satisfactory, both to himself and his pupils, that after still longer experience the author would say to those using this book

BEGIN, EXPERIMENT, GROW.

BOSTON, January, 1907.

METHODS AND AIDS IN GEOGRAPHY

CHAPTER I

PRINCIPLES INVOLVED IN TEACHING GEOGRAPHY

A KNOWLEDGE of the laws of mental operations, in other words, of their conditions, is a matter of the greatest practical utility to the educator. — *Sully*

BOOKS FOR REFERENCE

ARNOLD'S WAYMARKS.
BALDWIN'S PSYCHOLOGY.
BRETT'S MIND AND ITS EDUCATION.
CALDERWOOD'S TEACHING.
DE GARMO'S INTEREST AND EDUCATION.
DODD'S HERBARTIAN PRINCIPLES.
FINDLAY'S PRINCIPLES OF CLASS TEACHING.
FROEBEL'S EDUCATION OF MAN.
HINDALE'S ART OF TEACHING.
HEWITT'S PEDAGOGY.
KRUN'S LIFE OF PESTALOZZI.
JAMES' PRINCIPLES OF PSYCHOLOGY.
JOHONNOT'S PRINCIPLES AND PRACTICE.
LAURIE'S COMENIUS.
LOCKE ON EDUCATION.
MCMURRY'S METHOD OF THE RECITATION.
PARKER'S TALKS ON EDUCATION.
JOS. PAYNE'S LECTURES ON EDUCATION.
W. H. PAYNE'S SCIENCE OF EDUCATION.
ROSENKRANZ'S PHILOSOPHY OF EDUCATION.
ROYCE'S OUTLINES OF PSYCHOLOGY.
SPENCER'S EDUCATION.
SULLY'S PSYCHOLOGY.
THRING'S THEORY AND PRACTICE OF EDUCATION.
SWETT'S AMERICAN PUBLIC SCHOOL.
WHITE'S ELEMENTS OF PEDAGOGY.

METHODS AND AIDS IN GEOGRAPHY

CHAPTER I

PART I — PRINCIPLES PERTAINING TO THE TEACHER

EXACT KNOWLEDGE — CAREFUL PREPARATION — FREE INTERCOURSE BETWEEN TEACHER AND PUPIL — INSTRUCTION ADAPTED TO THE CHILD-MIND — CHILDREN NOT TO BE TOLD EVERY THING — THE RIGHT ORDER OF PRESENTING A SUBJECT

PART II — PRINCIPLES PERTAINING TO THE PUPIL

PUPILS' OBSERVING POWERS — SENSATION AND ATTENTION BEFORE PERCEPTION — HABIT OF ATTENTION, HOW CULTIVATED — THE ACTIVITY OF THE EAR, THE EYE, AND THE HAND — PROFESSOR CALDERWOOD AND OTHERS — INTELLIGENT OBSERVATION SHOULD BE CULTIVATED — "ALCAZAR" — NOT EASY TO CLASSIFY, ETC. — TO MISTAKE THE SIGN — REVIEW AND REPETITION

PART I

PRINCIPLES PERTAINING TO THE TEACHER

1. The Necessity of Ample and Exact Knowledge of the Subject taught.

OLD ROGER ASCHAM in his "Schoolmaster" describes his ideal student and teacher as "*Philoponos*, that one who hath lust to labor; and *Zetetikos*, one that is always desirous to search out any doubt, not ashamed to learn of the meanest, nor afraid to go to the greatest, till he be perfectly taught and fully satisfied."

"A teacher," said Edward Everett, "ought to know, of every thing, much more than the learner can be expected to acquire. The teacher must know things in a masterly way, curiously and nicely and in their reasons. He must see truth under all its aspects, with its antecedents and consequents, or he cannot present it in just that shape in which the young mind can apprehend it. He must, as he holds the diamond up to the sun, turn its facets round and round, till the pupil catches the lustre."

Education is both an art and a science. The art of education deals with the methods; the science of education explains the principles. Daily work in the schoolroom gives experience in the art of teaching; reading Sully, or listening to some of the great lecturers on psychology or pedagogics, increases one's knowledge of the science of teaching.

The main object and purpose of this book is practical: to help the teacher directly in his work, to deal with the methods of teaching geography,— the art of the subject,— rather than to study and consider the principles underlying those methods. Yet to save repetition and constant reference to numerous educational books, some of which may not be in the reader's library at the present time, it may be well to recall and emphasize a few well-known and generally accepted principles of education, now believed in and practised by the best instructors of the world.

It was a remark of Professor Henry, that

"The laws which govern the growth and operations of the human mind are as definite and as general in their application as those which apply to the material universe; and it is evident that the true system of education must be based upon a knowledge and application of those laws."

If a stranger should to-day visit a dozen schools in Boston or any large city in this country, and report the five teachers

who seemed to possess the greatest teaching capacity, he would without doubt select men of whom the superintendent of the city would laughingly say, "Of course they did well on those subjects, for they are experts in those departments." And further study of the five cases by the stranger would reveal the fact that these men possessed fine memories, that they were great readers, that they had been studying those particular branches for years and years, that they possessed large libraries on their favorite subjects, that they were never satisfied with their present knowledge, but were ever trying to increase their acquaintance with these studies.

The old adage, *Knowledge is power*, is never truer than in the work of teaching. Alas! how often have teachers tried to deny the truth of this saying in reference to *geography;* and how often have their dismal and cruel failures testified to the general correctness of the adage!

Exact, full, complete knowledge of the subject gives the teacher that self-confidence necessary to the best presentation of information, makes him court questions, independent of one little text-book, broad-minded, able to make comparisons, to express decided opinions if necessary, and, best of all, confers the power to stimulate by unconscious example the desire in the students to learn more on the subject.

2. This Exact Knowledge requiring Careful Daily Preparation.

Fitch truly says, "The moment any man ceases to be a systematic student, he ceases to be an effective teacher."

Constant study keeps the teacher in sympathy with the pupils, makes him more patient and more willing to explain. His example encourages them to work faithfully as nothing else will.

Geography is not an exact science, like arithmetic, which may perhaps be once learned, and learned forever. Geography is constantly enlarging its scope and changing its facts as the world progresses. Hence the live teacher must make fresh preparation, or teach a legendary geography, as is really being done all about us by the servile users of most text-books. Compare the productions and exports given for various countries, in many geographies, with the *facts* stated in the United States Consular Reports, and notice the wonderful differences.

3. Free Intercourse to be encouraged between Teacher and Pupils.

If the teacher has made the careful preparation mentioned above, he will be ready to encourage a certain dignified, and, at the same time, free, intercourse between himself and his class, such as will lead them to ask all kinds of questions upon the subjects under consideration, and also to impart information acquired at home, on their travels, by extra reading, even to present opinions of authors and books, and to give reasons for the same. No greater mistake can be made by a teacher than to hold himself so far above his pupils that they do not dare to be familiar enough with him to seek explanations of things misunderstood. All proper questions should be welcome, for nothing shows more conclusively good attention than the asking of a pertinent question at the right moment. The proper reply to the question may be, "Look in the dictionary," "in the gazetteer," or "in the geography."

Teachers can in a short time educate a class to exhibit this feeling of confidence, by refusing ever to laugh at mistakes, or to allow members of the class to do so, by refrain

ing from sarcastic remarks, and by approving all efforts made by the pupils in the direction recommended. Whenever a pupil gives some fact unknown to teacher as well as pupil, the teacher will wisely acknowledge his ignorance, and commend the pupil who taught him something. This course pleases the pupil, and makes him think all the more of his teacher.

4. The Method of Instruction adapted to the Mind of the *Average* Child in the Class.

As long as the present foolish and expensive method of teaching pupils in large classes of fifty-six members is adhered to by school-boards, under false ideas of economy, the teacher is practically prevented from giving much individual instruction in the regular time for school work. He must work with the class as a unit, and adapt his instruction and methods, not to the brightest ten, not to the dullest ten, but to the ability and understanding of the middle section of the class.

Some teachers make the mistake of spending most of their time and energy with the slow and dull pupils. Such a course is entirely wrong, because so unjust to the bright members of the class. The teacher must not undertake to supply deficiencies of brain ; that is the work of the Creator. In every class there will be some who can never understand, never remember, never be as accurate, as ordinary children. Such pupils can never be made perfect, even if they were placed under the most favorable circumstances of having a teacher all by themselves. After the teacher has adapted his rate of progress and simplicity of explanation to the ability of the average child, and made him understand, he

should advance for the sake of the middle part and the best part of his class, which together constitute the majority.

As classes differ year by year, a teacher's progress will vary in different years, and his methods change, in detail, at least. Hence the wise teacher studies his class as well as the subject to be taught.

Thring says, —

"The teacher's subject is not books, but mind. On the other hand, the lecturer's subject, in the first instance, is not mind, but books. This distinction is vital, and the most important results follow."

5. Children not to be told what they can find out for themselves.

Sir William Hamilton says, —

"The primary principle of education is the determination of the pupil to self-activity, — the doing nothing for him which he is able to do for himself."

Payne says, —

"One of the most important principles in education is, that what a child does for and by himself, educates him. The highest form of teaching consists, then, in setting a child to gain knowledge for himself by the exercise of his own native powers."

These men do not mean that the teacher is never to render help to the pupil: he is; but that help will be the best which aims to encourage pupils to help themselves. The teacher who awakens enthusiasm, guides and satisfies it when awakened, does much more for the pupil than the teacher who simply imparts information. The teacher should never forestall the delight which every mind has in finding out truth for itself.

How does Nature teach? She makes her pupils teach themselves. She gives no explanation, no discourse. She does not tell the difference between hard and soft things: she says, "Feel them;" between this animal and that, she says, "Place them side by side, and find out the difference yourself."

Perhaps no teacher ever followed nature's methods more closely than Jacotot, professor at Louvain, Belgium, and who died in Paris in 1840. Instead of pouring forth a flood of information on the subject under consideration, from his own ample stores, and explaining the whole matter, he would make a few simple statements, and then invite his pupils to raise questions, make observations, suggest answers, ask for facts. His object was to excite and direct the intellectual energies of his pupils, — *to train them to think.* His fundamental principle was: Learn something, and refer all the rest to it. His system is condensed into four words: Learn, repeat, reflect, and verify.[1]

Rousseau says in his "Émile:" —

"I do not at all admire explanatory discourses; young people give little attention to them, and never retain them. Things! things! I can never enough repeat it, that we make words of too much consequence."

There is need at the present time, for teachers to heed the warning sounded in the above extracts. Just as soon as a teacher begins to depart from text-book instruction in geography, for instance, he is apt to substitute his own tongue for the book, and pour into the empty air useless words which disappear like dew in the morning.

Instead of the teacher reading to the children frequently

[1] For an interesting account of Jacotot's method, see Jos. Payne's Education. English edition, p. 79.

on geographical subjects, he should help them to read to him; instead of telling them geographical facts, direct them where and when to find these facts, and how to present them to the class as new knowledge. Instead of interpreting the map to the children, teach them to read it as they do a book, and to relate what it tells to one another. The great object of this book is to suggest to teachers, *how to make the child learn geography for himself under the guidance of his teacher.*

6. The Necessity of being Orderly in giving Instruction: of proceeding from Particular Facts to General Truths; from the Simple to the Complex; from the Known to the Unknown.

Jos. Payne says: —

'The mind, in gaining knowledge for itself, proceeds from the concrete to the abstract, from particular facts to general facts or principles, and from principles to laws, rules, and definitions; and not in the inverse order."

There should be an orderly arrangement of what is taught, if for no other reason, because the memory retains facts more readily if presented in a natural order. The laws of mind, in this respect, are in harmony with the laws of nature. All well-written scientific articles, the best stories and poems, are developed in logical order.

The impossibility of remembering what violates this natural order of arrangement is well illustrated by the following example. Foote, the comedian, once won a wager by betting that a certain man of a powerful memory could not memorize in ten minutes the following: —

"So she went into the garden to cut a cabbage-leaf to make an apple-pie: and at the same time a she-bear coming up the street, pops

its head into the shop. What, no soap? So he died, and she very imprudently married a barber. And there were present the Picininnies, the elegant, and the Joblillies, and the Gargulies, and the grand Panjandrum himself; with a little round bonnet at the top; and they all fell to playing catch as catch again; till the gunpowder ran out of the heels of their boots."

There is a great deal of teaching which presents the subject to the young mind in about as jumbled-up a mess as the above nonsensical extract. Every teacher knows how easy it is to remember certain lectures and sermons, how difficult to recall others. Every teacher should study out the reason, and apply the deductions to his own teaching.[1]

This leads to the second part of this chapter, — the importance of understanding *a child's mind* in order to teach to the best advantage.

PART II

PRINCIPLES PERTAINING TO THE PUPIL

THE nature of a child's mind usually shows

1. His Observing Powers to be Keener and more Active than his Reasoning Powers.

Thring wisely says, —

"The complete absence of the reasoning faculty, so far as learning by means of it goes, determines at once the whole character of good teaching at the beginning. There must be simple statements and simple explanations. The early stages require the new ideas and facts to be put like pictures before the pupil. Rigid, formulated,

[1] Professor W. W. White's System of Training the Memory will greatly benefit teachers who possess poor memories.

square statements cannot find their way with their corners into the little tortuous windings of the little mind with all its blind mazes, passages that lead to nothing, obstructions of previous ideas, mobs of small idolatries, idolatries of play, idolatries of day-dreams, combined with absolute incapacity to bar the unyielding thrust of logic in its fine tissues."

In children the senses and the observing powers are keen and active, the mind being principally directed to the perception of the qualities of objects and their simple relations. Notice how readily boys and girls learn new games. How much two boys will see in riding or walking on a new road! How minutely they will describe a fire or an accident! What good observers they frequently are of the habits and actions of animals!

As the mind develops, more obscure and complex relations of objects are considered. Finally at maturity (from twenty-five to forty years of age) the reflective powers are most active. But the perceptive and conceptive faculties are not at this period thrown aside. The man of science bases his generalizations on his observations. Darwin, Agassiz, and Asa Gray could both *see* and *think* better than ordinary men. Their greatness is due to the complete development of both powers. The observation of the child is different from that of the man. The child's observation is largely that of perception; that of the man, of reason.

2. Childhood the Best Time to cultivate Intelligent Observation.

For the teacher to cultivate intelligent observation, to a large extent even in the grammar grade, is more rational than to cram the memory with words without meaning. The teacher can do this by teaching geography and history,

as far as practical, through pictures, maps, charts, and specimens, and by encouraging observations of nature. These observations should be planned and directed, and reports called for, either in writing or by oral recitation.

Side by side with this observation through the eye, should be cultivated by the teacher the observation of the meaning of words and their proper employment, in order to describe accurately and intelligently.

No study affords better opportunities for developing the observing powers than geography. If a teacher make the most of his opportunities, he will not only secure grand results, but have the pleasure of knowing that he is teaching philosophically, and developing the mind of the child in accordance with metaphysical laws.

Teachers need constantly to study the child-mind so as not to attempt to convey ideas belonging to *one* sense through *another*. Ideas of form, height, length, color, and the like, come through sight and touch alone. Forgetting this, teachers frequently try to convey to the minds of little children correct ideas of localities, through mere verbal descriptions, addressed to the ear, and wonder why the minds of the pupils are so listless, and why the children do not make good recitation thereupon. If a child has never seen a mountain, never seen a number of pictures of mountains and mountain scenery, how can he understand a finely given description of the Andes? and if he does not understand, why should he be interested? If the description given recalls no concept in his mind of the thing described, time and energy are wasted. But descriptions with illustrations are always interesting and valuable.

A vivid illustration of how new ideas come into the mind

was recently afforded the author while reading Dr. Hale's interesting book, "The Seven Cities of Spain." In one chapter he refers to the "Alcazar:" this he calls in another chapter "an imposing pile;" on another page it is spoken of as a "palace;" again as "a building;" then in another place he speaks of "the gardens of the Alcazar." No clear conception was given the reader by these expressions; and little idea was realized of what an Alcazar was, till the picture was accidentally found several days later under the word Toledo, in Appleton's Encyclopædia. If the readers of this chapter will try to form an idea of an Alcazar from what has been said, and *then* look at the picture in the encyclopædia, and compare the former concept with the latter, they will perhaps realize the value of pictures in teaching children.

3. That Sensation and Attention precede Perception.

By this is meant, knowledge must be *ob*tained before it can be *re*tained; it must be both obtained and retained before it can be used. In obtaining knowledge of things, sensation must be experienced before attention can be given, and both the sensation and attention must precede perception.

These fundamental truths are constantly violated in teaching, by some teachers who fret, fume, and scold because their pupils do not remember operations in arithmetic which they, the pupils, never understood, for they never were explained and illustrated. These same teachers wonder why children forget the names of capes, the length of rivers, the locality of towns that have no earthly interest to these children, for nothing has ever been told them about

these places to create an interest, not even the beautiful meaning of the geographical names. Adult minds usually act in the same way. If the lecture or sermon was beyond the comprehension, it did not interest; then it was not remembered.

4. His Habit of Attention cultivated by appealing to Curiosity, Sympathy, and Love of Activity.

There are very few children who do not have a natural *curiosity* to see what is in the closed box, to hear the end of the story, to know more about the subject. A little information in reference to the camel creates a curiosity, or desire, to learn more about the "ship of the desert." By this information, the skilful teacher creates a curiosity to learn about the desert, and that knowledge of the desert creates a curiosity to know something of Africa, the home of the camel and of the desert. If the teacher uses pictures, maps, and charts which appeal to the eye in imparting this information in a way understood by the child, the curiosity never flags, and the attention is satisfactory.

Sympathy is another great help in securing attention. Hearty interest in the subject manifested by the teacher secures the attention of the pupil almost unconsciously. This was one secret of Agassiz' power as a teacher.

Madame Necker says, —

"The idea that we are constantly occupied about him may excite his gratitude, but it will not determine the direction of his inclinations. But if children see that our interest is awakened, and our curiosity excited, by the idea of making some new observation, or ascertaining some new fact, they will soon try to anticipate our discoveries."

It has been our custom for years to study *with* the children in geography, history, etc. The results have been most gratifying. In giving out the lesson, do not say, "*You* may take," but "*We* will take climate for the next lesson." When the hour for recitation comes, ask first, "Now what have we learned?" Be sure to give due credit for new facts. Be sure also to have some interesting facts to relate, not generally known, to show that *you*, the teacher, have been studying with your pupils.

The well-known activity of children can be much more easily directed than repressed; and when directed it becomes a source of great pleasure, and helps to fix the attention in the closest manner.

This activity may be classified as that *of the Ear, of the Eye, of the Hand.*

The teacher can always direct that of the ear by asking questions. The topical study of a subject does not mean the use only of topical recitation. The topical recitation should be freely used in review, used more in upper classes than in lower, used somewhat in all grades; but the child's mental activity requires also short, sharp, direct, quickly given questions, so that every one in the class can think out the correct answer. The question must be asked before the pupil is called to answer, in order that all may *think the answer.* Teachers very commonly violate this order, and wonder why the pupils are not more interested. These questions should be of two kinds, — first, those in relation to the bare facts of the lesson; second, those in reference to the relation of these facts to cause and effect, in reference to the *why*, in reference to comparison by similarity and by contrast.

Some children will answer well the first kind of questions, and utterly fail on the second. Girls frequently answer the first better than boys, while boys usually reason and think better than they remember the book. The *why* questions should be interspersed with the *fact* questions, and not bunched at the end or beginning of the recitation.

The activity of the *eye* is readily directed by the teacher's use of pictures, charts, and the blackboard. The success of kindergarten schools is largely due to directing this activity of the eye and hand. Grammar-school teachers make a serious mistake in teaching, and show their complete ignorance of the child-mind, when they suppose this activity of the eye and hand ceases at the age of nine or ten years. It will be much safer to place the limit at twenty. *In fact, it never wholly ceases.*

The methods of directing the activity of the eye are fully given in the chapter on Pictures and Objects. In passing we only need quote a few authorities.

Professor Calderwood says, —

"Children are most susceptible of what comes through the senses. It is therefore a great point gained, when the eyes as well as the ears of the pupils can be kept in exercise during the lesson. To reach the mind by double avenues at the same moment, is to increase the chance of success."

Pestalozzi says, —

"There are scarcely any circumstances in which the want of application in children does not proceed from the want of interest. . . . To change all this, we must adopt a better mode of instruction, by which the children are less left to themselves, less thrown upon unwelcome employments of passive listening, but more aroused by questions, animated by illustrations, interested and won by kindness."

Fitch says, —

"No amount of care, inventiveness, and forethought which you are able to devote to illustration will be wasted."

Teachers should remember, all psychologists agree that sight takes the lead as the channel of perception. Sully says, —

"Since sight is the most important and the most discriminating of the senses, we find that visual percepts are better recalled than any others. The capability of representing an object or event some time after it has been perceived, depends on the force with which the impression was stamped upon the mind. A bright object distinctly seen will be recalled better than a dull one obscurely seen. We recall the appearance of a place we have actually seen, better than one shown to us in a picture, and we recall the picture more easily than the words describing the same place."

Spencer says, —

"The child's restless observation, instead of being ignored or checked, should be diligently ministered to, and made as accurate as possible."

Comenius was perhaps one of the first, two hundred years ago, to announce the idea of directing the activity of the hands in children, in order to secure attention, awaken interest, and so lead to learning. In his "Orbis Pictus" he says, "Let things which have to be done be learned by doing them." Both Pestalozzi and Froebel insisted upon self-activity on the part of the pupil. A harmonious development of the human powers requires not only assimilation, but also production. The development of the expressive faculties includes the power of giving utterance with the organs of speech, and also *with the hands*.

This hand energy can be utilized by the children in writing, drawing, moulding, and sewing. How these acquirements (except the last) are to be employed in geography, will be shown in various portions of this book.

5. Not Easy for the Child to classify, analyze, combine, or deduce.

To refer our knowledge to general principles, is to classify it. Unless our knowledge is classified, it will not be easily remembered, any more than, among papers thrown promiscuously together, the desired one can be readily found when needed by lawyer, teacher, or merchant.

Children easily observe, perceive, and remember single facts. A large part of the teacher's work is to help the child arrange and classify in proper logical order these facts, and then deduct general principles therefrom, make comparisons, or seek for causes and results.

6. A Child apt to mistake the Sign of the Thing for the Thing itself; the Word, for the Idea.

The *map* of Africa he thinks is Africa; the crooked line on the map is the Niger River. The *sign* of the fraction is the fraction. Even adults make this mistake. Speak the word *Lena*, and ask for the concept formed. In nine cases out of ten it will be that of a crooked black mark running from south to north on a map. The best way to lead children to form the correct concept is by frequently using pictures, going to nature, and by frequently asking for the meaning of words employed in recitation.

7. Review and Repetition necessary in teaching Children.

This follows as a corollary from the preceding statements. Review work should be conducted very differently from

advance work. The time is quickened; only the great facts are touched upon; comparisons are frequent; the pupil must now do the work, instead of the teacher. Topical recitation may become frequent. Interest is created by new ways of conducting the recitation, competition, allowing the children to ask questions, etc.

OUTLINE

1. The Teacher.

PRINCIPLES.	APPLICATION.	AUTHORITY.	SOURCES OR MEANS.
1. Ample knowledge.	Gives confidence.	Ascham, Everett.	Of the world.
2. Careful preparation.	The teacher's example in studying. Free exchange. The average child.	Thring.	From books and nature.
3. Self-activity.	The teacher to direct.	Hamilton, Payne, Jacotot, Rousseau.	Landscape, products, specimens.
4. The right order.	From the particular to the general, simple to complex, etc.	Joseph Payne.	Memory.

2. The Child.

1. Observation natural and strong.	Cultivated in childhood.	Thring. McMurry.	The intelligent teacher.
2. Attention.	Cultivated by appealing to curiosity, sympathy, and activity.	Necker.	Ear, eye, and hand.
3. Reasoning powers weak.	The child does not easily classify, etc.	Experience.	Review, repetition.

CHAPTER II

AIMS AND RELATIVE IMPORTANCE OF GEOGRAPHY

THE elevation of geography to the place which it ought to hold in the school curriculum appears to me a matter of vital moment: first, from the value of the subject as a branch of knowledge; and secondly, because it offers a cure for what I conceive to be a radical defect in our educational method, namely, the want of any effective discipline in habits of observation. . . . It may be begun on the very threshold of school life, and may be pursued in ever-increasing fulness of detail and breadth of view up to the end of that time. No other subject can for a moment be compared with it in this respect. It serves as common ground, on which the claims of literature, history, and science may be reconciled. — *Archibald Geikie.*

BOOKS FOR CONSULTATION

Crocker's Methods of Teaching Geography.
Gage's Life of Ritter.
Guyot's Earth and Man.
Huxley's Physiography.
Johonnot's Principles and Practice of Teaching.
Marsh's Man and Nature.
Physical Geographies, such as those by Geikie, Guyot, Mill, Davis, Dryer, Tarr, and Gilbert.
Reclus' The Ocean; The Earth.
Ritter's Comparative Geography.
Ritter's Geographical Studies.
Science Primers.
Tyndall's Forms of Water.

CHAPTER II

PART I — ITS AIMS

TWO PURPOSES — QUESTIONS IN TEXT-BOOKS — MISTAKES — CARL RITTER — SOURCES OF KNOWLEDGE — DEFINITION OF GEOGRAPHY

PART II — ITS IMPORTANCE

TWO VIEWS — WORTHY OF CAREFUL CONSIDERATION — VAST PROPORTIONS OF PRESENT KNOWLEDGE — FORMER KNOWLEDGE — THE HUMBLEST PUPIL AND HUMBOLDT — GROWTH OF COMMERCE — GENERAL CULTURE — GROWTH OF INTELLIGENCE — TIME WHICH SHOULD BE GIVEN TO GEOGRAPHY

PART I

ITS AIMS

BEFORE we can intelligently discuss methods of teaching geography, it will be necessary to consider what geography is, its real aims, the objects to be constantly sought in teaching it, and its relative importance to other studies.

In teaching languages and mathematics there are two distinct purposes always in mind, — the practical application of these studies, and the indirect mental discipline afforded in studying them; the second being more important than the first. Since geography deals so largely with facts, and since it is not so much a science in itself as it is a collection of facts and principles taken from various other sciences, the main object in teaching it has apparently been, in the past, simply to impart, in the shortest possible time,

a knowledge of the two least important facts, — namely, locality and bare statistics.

Most of the text-books in geography denominated "brief," or "shorter courses," seem to be merely combinations of atlases and dictionaries, making the height of mountains, the length of rivers, the population of towns, and the locality of insignificant capes, more prominent than their real value demands; while descriptions of the greatest nations upon the earth, and the grandest phenomena of nature, have been condensed or generalized until they are as interesting for young minds to read as an old-fashioned spelling-book. The sale of these "shorter courses" has been immense, because, in the mind of many school-officials, a geography is a geography, and the smaller and *cheaper* the better for his latitude. In thus making geography nothing more than an ill-sorted collection of dry, unimportant, uninteresting facts to be memorized, several serious mistakes have been made.

It is a very serious mistake to suppose that these bare facts of geography, such as are contained in the answers to nine-tenths of the questions asked in nine-tenths of the present text-books, and demanded in nine-tenths of the examination-papers, are of any importance after they are memorized.

Taking the first geography at hand, we open at the Continent of Europe, and, selecting almost at random, find in Lesson 78 two paragraphs containing the following questions: —

III. How is Elberfeld situated? For what is it noted? *For its manufactures.* How is Hanover situated? Potsdam? Stettin? Colberg? Name three Prussian cities on the Oder. On what river is there another Frankfort in Prussia? *M.*

VI. What was the capital of the former kingdom of Poland? *Warsaw.* On what river is Warsaw? What other place is situated on the Vistula? *Cracow* (*kra'ko*). In what country is Cracow? What is the principal branch of the Vistula? What place in Austria is on the river Bug?

This is a fair specimen of the seven hundred and ninety questions asked in this geography upon Europe. How many of the answers to those questions are worth remembering after they are learned? In another geography, some of the most interesting portions in the descriptive chapter on Africa are the following: —

24. Abyssinia lies south-east of Nubia. It is a mountainous plateau of great height. The Abyssinians are Christians.

25. The Sahara is very sparsely inhabited, and contains no States. The various tribes of Moors, Tuaregs, and Tebus, who inhabit the oases, or roam over the country without fixed habitations, are governed by chiefs.

27. Cape Colony, a British possession, lies south of the Orange River. The climate is mild. Wheat, wool, and wine are the chief products. *Cape Town* is the capital.

How useless, nay worse, how cruel, it is to place before young, imaginative, active, sight-and-picture-loving children, such stupid, good-for-nothing, and uninteresting facts as the above, when on every hand can be found so much of story, incident, personal adventure, travel, description, physical and political information, comparison, and science, capable of both interesting and benefiting these same wide-awake children! Yet, in a large number of our text-books on geography, similar jejune, unimportant, copula-and-attribute statements of the different countries will be found to compose a great part of the book.

It is a mistake to believe that pupils possessing a fair degree of common-sense will be especially interested in the acquisition of such encyclopædic information, or will retain such facts even if once memorized. Scholars who have been crammed with such statistical food are usually heard to say, "I have been through the geography several times; but I never liked it, and I cannot remember it."

Another mistake arising from this narrow view of the purposes of geography is that it affords to the mind no mental discipline. In the memorizing of dry facts there is no appeal to the imagination, to the judgment; no stimulating active inquiry; no presentation of cause and effect; little, if any, growth of the mind produced. Yet geography, rightly defined, rightly comprehended, and rightly taught, may be made one of the most effective educational instruments within the reach of grammar-school teachers.

Geography, although professing to be a description of the earth and its inhabitants, has too frequently been treated as though it was only the science of the *where*, map-drawing its chief glory, and the memory of words its only means of acquisition.

In contrast with this narrow and bigoted idea of geography, let us consider the view of Carl Ritter, the greatest of modern geographers. He boldly discarded all arbitrary geographical systems, and started with Nature herself. By Nature he meant the entire creation, hence he commences with a simple study of the universe and the solar system. He calls attention, in this brief *résumé*, to the fact that the earth, when compared with the other planets, is equally removed from every extreme. It is neither the largest nor the smallest, neither the swiftest nor the slowest, neither the

warmest nor the coldest. This medium character brings the earth into harmony with the system of which it forms a part, and indicates, perhaps, that it is the only one in the system which could possibly be inhabited by man. It is thus especially worthy of being studied in all its features.

In a geographical point of view, the world becomes the common ***home*** of our race; not merely the theatre of the

Fig. 1. — Carl Ritter.

operations of Nature, but the arena for the development of human life and history. Here the forces and laws of Nature are displayed in their variety and independence. It is the field of human effort, and the scene of Divine revelation. Geography, then, is something more than mere description. It should teach the most important *relations*, and thus be considered a science. The earth should be studied in a threefold relation, — to the universe, to nature, to history.

Geography may, then, very properly be defined "as the department of science that deals with the globe in all its

features, phenomena, and relations, as an independent unit, and shows the connection of this unified whole with man, and with man's Creator."

In studying geography we should look upon the world as almost a living thing, having an individuality of its own. We should think of it as a seed sown from the hand of God, filled with a germinant power of life, transforming and making the earth more and more worthy of the noblest inhabitants. The science of geography becomes then more important than the knowledge of facts, relations more valuable than descriptions.

The sources of this geographical knowledge are twofold, — written accounts of scientific travellers, and continued investigations. Personal investigations are necessary to understand the investigations of others. "Wherever our home is, there lie all the materials which we need for a study of the entire globe." Humboldt corroborates this view of his friend Ritter when he says, in his "Kosmos," "Every little nook and shaded corner is but a reflection of the whole of Nature." The roaring brook is a type of the thundering cataract, the outlines of a little island suggest the coast-lines of a continent, a range of hills reveals the structure of the loftiest chain of mountains. The study of the district about our home also helps us to understand foreign lands, by furnishing us with types and units of comparison. Herodotus, Polybius, Strabo, Ptolemy, Humboldt, and Ritter all studied geography in the world of nature rather than that of books.

But no one person can now, as formerly, visit in a lifetime all parts of the known world; hence he must accept, to a great extent, the narratives and maps of scientific travellers

as authoritative. To read the many excellent books recently published in English, French, and German, referred to and classified in this treatise, will occupy the leisure time of most persons for several years. Besides these books of travel, the well-informed teacher of geography must know something of the various sciences, — the history and growth

Fig. 2. — Humboldt.

of nations, commerce, and the laws of interchange of the commodities of all climes.

To perceive more clearly and fully how broad, comprehensive, and inspiring Ritter's idea of geography was, the reader is urged carefully to read the Life of Ritter, his "Geographical Studies," and "Comparative Geography," as well as all the works of Professor Guyot, once the pupil,

always the friend and admirer, of the great German geographer.

Ritter's definition of geography given above would not be adapted to grammar school use; but its essence can be expressed in the following brief statement: —

Geography is a Description of the Surface of the Earth as the *Home* of Man.

In depicting to children this home of man, so wondrously beautiful, so marvellously fitted to supply all of man's wants and administer so perfectly to his happiness, geography should describe in simple language the remarkable laws by which the earth is governed; it should show the peculiarities of its surface, and explain the simple facts of daily occurrence, such as winds, rain, ice, and snow, in order that children may have better conceptions of man's surroundings and characteristics as affected thereby. It should associate towns, rivers, mountains, and natural divisions, with the different races of men, with their industries, commerce, and occupations. It should enter into the spirit of the present age, and make prominent, instead of long lists of names and localities, the characteristics of each country, the flora and fauna, the architecture, the business enterprises, some of the principles of commerce, routes of travel, the growth of cities, varieties of scenery and climate, the distribution of the three forms of life, the education of the people, and the manners and customs of other lands as compared with our own. In brief, the principal object to be sought in teaching geography is to teach *humanity* instead of *locality*.

When scholars leave the grammar schools they should have acquired, in addition to a knowledge of the essential

facts of geography, the ability to compare one country, one zone, one river, with another; to classify and arrange additional facts; and above all, they should have acquired a taste for good reading, a love for travel, some knowledge of the best books of travel, and of the world's wonders and beauties; in short, what we may appropriately call *geographical culture.*

PART II

ITS RELATIVE IMPORTANCE

Upon this subject there are two extreme views. Many look upon geography as worthy of very little regard, attention, or time; while a few give it so much prominence that it overshadows all the other studies. Neither view is in accordance with a true harmony of grammar-school studies. These enthusiastic lovers of this study are so rare that there is no need of taking time and space to discuss their position. The former, more numerous and more tenacious of their views, lost all respect for geography, in many cases, through the wretched methods employed in teaching the subject by their early instructors. Persons holding such views are not likely to succeed in, or to enjoy, the teaching of this study. To them we especially address ourselves in this chapter.

Many of our ideas of geography have come down to us direct from the Middle Ages.[1] Whatever the true relation of this study to the other studies may have been in early

[1] The description of the grand divisions, given in most geographies to-day follows the same order in which Strabo (24 A.D.) set the pattern.

times, geography *to-day* is certainly worthy of the most careful consideration on the part of teachers and school authorities, being itself a *peer* among the other studies. We place geography in this position for the following reasons: —

1. Because our Present Knowledge of the World, i.e., Modern Geography, has at Length grown to such Vast Proportions.

To realize this, we must glance at the history of geographical development. Geography is a comparatively modern study. It began in ancient times with the world of nature rather than books. There was no geographical literature when the Phœnicians held undisputed sway over the known world, then bordering the Mediterranean Sea. Phœnician boys were not greatly troubled about this study. From Himilco, about 700 B.C., to Stanley, is twenty-five hundred years in time, but an immeasurable epoch in advancement. For our purpose, this time may be properly divided into three unequal epochs.

Herodotus, on account of his brief wanderings, became, 444 B.C., the first critical geographer of the Greeks. Strabo travelled from the Caucasus to the Rhone, and from the Alps to Ethiopia, and for this was looked upon as a modern Humboldt. His wonderful knowledge enabled him to write a book, and that book was the first geography of which we have any account. In it he expresses his firm conviction that the Caspian Sea was the limit of the earth to the north. When Ptolemy lived at Alexandria, about the middle of the second century, he possessed, with all his knowledge, fewer correct ideas of the outlines of Scotland and the real position of Ireland than a child does to-day in a Boston primary school. The world was then divided into two parts, — *the*

known and *the unknown*. The equator was not crossed till 1471. Marco Polo was the Bayard Taylor of the Middle Ages. Prince Henry, the Navigator (d. 1460), greatly enlarged the knowledge of the world, and appropriately closed this epoch.

Columbus, with his brilliant discoveries, opened the second epoch. His grand contributions to geographical knowledge were supplemented by Vasco da Gama, the Cabots, Cabral, Ponce de Leon, Balboa, Cartier, Davis, Frobisher, Magellan, and a host of others; and yet none of these men could have passed a Boston diploma-examination upon geography, because so much of the world was then still unknown. In the seventeenth century, Hudson's discoveries carried geographical knowledge still farther from the Mediterranean. Australia was added to the list of continents. New Zealand and Van Diemen's Land were discovered and named. At the close of this century, La Salle descended the Mississippi. In the eighteenth century new portions of the world were made known by Cook's three celebrated voyages, and the labors in Africa of Bruce and Mungo Park. At the end of this second epoch, geographical knowledge embraced a large part of the inhabited world, but there remained portions of continents and more distant regions still largely unknown.

These unknown regions were situated principally in tropical Africa and the frigid zones. Through the noble and heroic efforts of Livingstone, Burton, Grant, Speke, Baker, Miss Tinné, Cameron, Stanley, and many others, the long-debated problems of the hydrographic systems of Central Africa have been forever settled. The Mountains of the Moon no longer cross the continent from east to west, as

in our boyish days. The Nile, Zambesi, and Congo have each a source and a course as well as a mouth. All we need to know about the polar regions has been revealed to us in the explorations and expeditions during the last forty years under Kane, Ross, Belcher, McClintock, McClure, Dr. Hayes, Capt. Hall, Peary, Professor Nordenskjöld, De Long's party, and Lieut. Greely. The humblest pupil in our common schools is now taught more facts connected with these regions than the great Humboldt knew at the time of his death. The surface of the land and water masses have been now so thoroughly explored that there remains only the bottoms of the oceans for men to investigate, and these sections are now being carefully studied. (See "Voyage of the Challenger.") Is not a study with such an historical growth as this, and with so extensive a field for consideration, an important one?

2. Because of the Recent Rapid Growth of Commerce and Industry.

Steamships and railroads have brought the nations into closer relations with each other. The inventions of the telegraph and telephone have made business world-wide. At the beginning of this century there was little international communication or commercial enterprise. Nations lived by themselves and for themselves. The improvements in travel, the reduction of postage, the laying of cables, the opening of the ports in China and Japan, have so stimulated and enlarged business enterprises, that many firms now have branch houses in half a dozen cities belting the world. Steamships plough all seas, and the productions and the manufactures of the antipodes are quickly and regularly brought to our markets. A trip round the world is no

longer a wonderful feat. The United States is so situated, from its position, its natural products, and its skilled labor, as to become, of a certainty, deeply interested financially in this world-wide commerce between the civilized and the savage and half-civilized nations of the world. Hence, for a child to graduate from our schools, and not to carry away a good geographical training, will be every year more and more a disgrace and a lifelong regret.

3. Because it affords such a Splendid Opportunity for General Culture.

Not even history can claim for itself a wider field of thought and investigation, or one more useful, than geography when taught in the proper spirit and with the proper purpose in view. Geography thus taught will introduce the child in a pleasant way to many elementary facts in history, astronomy, physics, physical geography, geology, mineralogy, botany, meteorology, zoölogy, and ethnography, although the names of these studies may possibly remain unknown to the young student. Other studies are more or less special and restrictive; this study is all-embracing, universal, and it is very properly called "the all-science." Geography, taught topically, will give at the same time instruction to pupils in spelling, dictation, writing, oral lessons, composition, drawing, and reading.

4. Lastly, Because of the Present Growth of General Intelligence.

General intelligence is the result of travel and reading. Geography is a necessary auxiliary to both. Hundreds of men and women travel for pleasure and business to-day, where ten travelled fifty years ago. Thousands of books are published and read to-day, where twenty were read half a century ago. But the growth in circulation of the modern

magazine and newspaper is the best evidence of the growth of general intelligence among the masses. These magazines and newspapers not only constantly refer to the most interesting facts of geography, and the most distant parts of the world, but they have a special department devoted to this subject, so great is the demand of the public for correct information on these subjects. The Americans are the greatest readers in the world. The ever-increasing influence of the magazine and newspaper among us demands that more and more shall be accomplished in our schools in geography. Any study with such a history, so closely connected with the great commercial enterprises and business spirit of the age, capable of administering so largely to the general culture of the pupils, so practically useful, *is exceedingly important*, and it is doubtful if arithmetic even can more than hold its own by its side.

Yet there are educationists who believe that "less time should be given to geography." Since the introduction of manual training, drawing, and music into our schools, the amount of time given to some of the studies has, of a necessity, been reduced. The special study usually selected for this curtailment has been geography. In Boston the time given to geography, according to the supervisor's course of studies, is half the amount given to arithmetic, two-thirds of what is given to language, and nearly the same as is devoted to oral instruction. In many schools the amount of time is relatively less than this. But if the study is to-day as important as we have attempted to show, does it not follow, without further argument, as a corollary, that geography should receive in the grammar-school course *as much time and attention as any other one study, excepting perhaps arithmetic?*

CHAPTER III

WRONG METHODS vs. THE TOPICAL METHOD

THERE was an undeniable gain when exact method was made an essential part of a teacher's professional preparation.

Prof. W. H. Payne.

BOOKS FOR CONSULTATION

Brooks's Normal Methods of Teaching.
Currie's Common School Education.
Fitch's Lectures on Teaching.
Geographical Text-Books.
Hopkins's How Shall My Child be Taught?
Hopkins's Educational Psychology.
Kiddle's How to Teach.
Swett's Methods of Teaching.
Gordy and Twitchell's Pathfinder in American History.

CHAPTER III

PART I — WRONG METHODS

THE TEXT-BOOK METHOD — USELESS QUESTIONS — UNNECESSARY MEMORIZING — MISTAKES — THE CRAMMING METHOD — NO-STUDY METHOD

PART II — BETTER METHODS

THE TOPICAL METHOD — TOPICS FOR THE FIRST TWO YEARS — TOPICS FOR THE THIRD AND FOURTH YEARS — TOPICS FOR THE FIFTH AND SIXTH YEARS — PRACTICAL SUGGESTIONS

PART I

WRONG METHODS

IT is customary to pull down the old house before building up the new one. Following the same order, we design to point out, first, some of the most faulty methods of teaching geography, in order to prepare the way for a better understanding and appreciation of the right method subsequently recommended. To call attention to a poor method, is, in many cases, sufficient to lead to its abandonment. Some of the most prominent of these wrong methods will now be referred to, and their weaknesses pointed out.

1. The Text-Book Method.

The poor teaching of geography, and the wretched results so frequently obtained, can, in nine cases out of ten, be traced to the exclusive employment of the text-book. This slavish following of the book, both in precise order of sub-

jects and in its entirety, was perhaps more common twenty-five years ago than to-day. Some teachers have emancipated themselves, and are happy in their freedom. This method made it very easy for the teacher, as far as instruction went, and very hard for the children. Result, — most scholars came to dislike geography more than any other study. Since then text-books have improved, and pupils using the better books are so much the better taught. Methods of teaching, however, have improved more than text-books; and still hundreds of teachers are assigning lessons on the old plan, and reaping the harvest of unsatisfactory results. The principal of a large grammar school in this State recently assigned to his graduating class for a home-lesson three pages of the text-book, containing descriptions and map-questions in reference to nine of the Central States. The scholars were told "to learn carefully the entire lesson." To do so required them to learn the answers to two hundred and eighty-seven questions. Many of the statements were no more interesting to a Massachusetts boy than the following, which is one of the two hundred and eighty-seven answers: "Fond du Lac, Oshkosh, Racine, and Jonesville are thriving towns." These are some of the questions: "Keweenaw Bay is a part of what lake?" "Where is Kaskaskia situated?" We are afraid such extreme foolishness and such cruelty are not uncommon.

In Germany we understand the only text-book used in geography is the atlas, the teacher supplying orally all the necessary information. With superior teachers such a method has many advantages, but in most schools a good text-book is a great blessing to teachers and scholars. A fact stated in a text-book is just as important and useful as

if stated orally by the teacher, and much time and strength have been saved to both parties. But geographical facts seem dead to an ordinary child when met with for the first time on the printed page, unless the living teacher breathes into them the breath of life by related incident, explanation, anecdote, comparison, or topical arrangement. The judicious use of a good text-book we believe to be better than the German method.

Teachers, in following the text-book method, invariably fall into three prominent mistakes, viz., —

(*a*) *Unnecessary Memorizing.* — When scholars are asked to commit to memory page after page of dry, uninteresting descriptions, bare statistics, and the locality of thousands of places not associated with events or persons, the work is exceedingly irksome. It is about as pleasant and profitable as it would be for a teacher to memorize consecutive pages of Webster's Dictionary. No teacher ever asked scholars to learn the dictionary by heart; and yet our geographies are to the young mind what a dictionary is to an adult mind, — a collection of empty facts, sometimes bound up with pictures, valuable for reference, but neither attractive to read nor to memorize. When the scholar has committed to memory all these facts found in most geographies, of what use will two-thirds of them ever be to him? The *main* facts of geography must be learned, but there is a vast saving of time and force when the teacher bears in mind that two associated facts are much more easily remembered than one isolated fact.

(*b*) The second mistake consists in requiring scholars *to learn largely from the questions given in the text-book.* Scholars taught in this way do not learn to observe and

think for themselves. Ask these scholars some practical, common-sense question, as, Why New Orleans is situated near the mouth of the Mississippi River? or, How bananas grow? and they are dumbfounded. A class taught by this method was recently asked if there was any current in a river. Only one boy knew, and he said, "No." In following the printed questions, the scholars rely upon them, and do not learn to talk or write connectedly about a subject.

(*c*) The third mistake is *in making maps and map-questions too prominent.* In some schools the chief end of geographical study seems to be to acquire facility in drawing maps. This is making a means an end. Scholars are to be taught *through* the map, and not *for the sake* of the map. Asking too many map-questions is a more frequent mistake. One geography (medium size) in our possession contains seven hundred and ninety map-questions upon Europe, and only two hundred and twenty-seven questions on the descriptive part. Another, by a different author, a revised edition, contains six hundred and eighty map-questions on Europe.

A teacher near Boston recently asked his second class, in the course of four monthly examinations upon Europe, four hundred and fifty map-questions. Few of these localities remain fixed in the child's mind. How much wiser for the teacher to spend one-sixth as much time on locality, and more on surface, climate, commerce, routes of travel, manners and customs, works of art, education, and literature! Locality must be taught to some extent by itself; but, as far as possible, it should be taught through association. When pupils become interested in an event, a person, or a

remarkable phenomenon, they easily remember the locality mentioned. The narrative of the "Jeannette" fixes in mind the locality of the New Siberia Islands and the Lena Delta.

Another vicious and frequently employed method is

2. The Cramming Method.

Whenever examinations become too prominent, or teachers are judged by results alone, as in some of our largest cities, there is a temptation to cram; but it is just as detrimental to pupil and teacher in geography as in any other study, and for the same reasons. Isolated, disconnected facts are taught without regard to cause and effect, or order of arrangement. The teacher, instead of studying Guyot and Ritter, studies old examination-papers. The end and object of study seems to the scholar to be, not to learn for the sake of knowledge, but for the sake of passing certain examinations. The after pleasures, benefits, and advantages, as well as present mental growth, are all made subordinate to a temporary success. The moral effect upon the pupils is far from elevating. They soon learn from the teacher to spend more thought and time in guessing what the questions will be in the coming examination, than in learning a great law of nature, or the facts in the climate of a great country. The two methods already mentioned are very apt to go hand in hand.

But a worse method even than these is what may be called

3. The No-Study Method.

It affects both teachers and pupils, but not always both classes at the same time. Many teachers believe that

geography (and spelling) can be taught without preparation on the part of the teacher. The usual results obtained in this way are its condemnation. Let a teacher make a thorough study of some country like Australia, and then notice what a difference it will make in the pleasure of teaching, and the interest awakened among the pupils.

No teacher can awaken an interest among his pupils if he possess none himself; he cannot be interested in a subject or a country, if he knows little or nothing about it, any more than he could in a person of whom he was ignorant. On the other hand, it is equally bad for the teacher to make great preparation for the lesson, recite it to the pupils, and ask and expect them to do nothing but listen. All should be required to study. Even beginners in this study, who are taught orally, shown pictures, and taken on imaginary journeys, should also have something *to learn*, *to remember*, and *to recite*. This may be written on the blackboard, if text-books are wanting, and learned therefrom by the pupils.

PART II

BETTER METHODS

According to the classification given by Professor Brooks in his excellent book entitled "Normal Methods of Teaching," there are four correct methods of teaching the noble science of geography. (1) The *Analytic Method*, which begins with the world as a whole, and passes by successive divisions down to the State, county, town, or city in which

we reside; (2) The *Synthetic*, which begins at the smaller division, as a schoolhouse, yard, town, county, etc., and passes by successive enlargements to the surface of the world; (3) The *Inductive*, which begins with the particular facts of science, and passes to their classification into systems; and (4) The *Deductive*, which seizes upon the laws or general characteristics of a group of facts, and passes to the particulars embraced under these laws. This last method is more than analytic. It not only goes from the whole to its parts, but from the general to the particular. It is not our purpose to discuss now the relative value, or the proper employment, of these methods. We seek the more practical.

Whether the method of teaching the whole subject of geography be analytic, synthetic, or inductive, we recommend, in place of slavishly following the text-book,

THE TOPICAL METHOD OF STUDY

We do this with much confidence, after years of experiment and diligent search for light on this subject, because it is the best method thus far found by which to create unbounded interest among pupils in this study, and because it enables the teacher to instruct with satisfaction and pleasure. When the carpenter builds a house he finds it necessary to have the architect furnish him with certain plans for his guidance and constant inspection. In like manner the teacher and his pupils, in following through the delightful paths of the topical study of geography, will require a carefully and properly arranged list of topics for direction and help, and also to prevent wandering and loss of time.

Excellent sets of topics for geographical study are given

in numerous educational works. One of the best and most comprehensive has been arranged by Professor Guyot, and can be obtained from his publishers.

Classes just commencing the study need a very simple and short arrangement of topics. The following will probably be found difficult and extended enough for beginners.

SCHEDULE OF TOPICS. No. I.

1. Observation of a Field or Street near the Schoolhouse.
2. Oral and Written Recitation on these Observations. Sketch of Field or Street.
3. Field Lessons farther away from the School where Type Forms of Hills, Valleys, Brooks, etc., can be seen.
4. Recitations on the above Observations.
5. Study of Pictures of Type Forms.
6. Reading about Child Life in different Countries.
7. Journey Geography. (See p. 75.)

SCHEDULE OF TOPICS. No. II.

I. Introductory Questions.

1. What Things come from the Country studied?
   - *a*. Wheat, Cotton, Wool, etc.
   - *b*. Gold, Silver, Copper, etc.
   - *c*. Rubber, Coffee, Tea, etc.
   - *d*. Hemp, Flax, and other Fibres.

2. What Nationalities are seen in your Streets?
   - *a*. Indians, Negroes, etc.
   - *b*. Chinese, Japanese, etc.
   - *c*. Germans, Italians, Russians, etc.

3. In what Direction is the Country studied from the Schoolhouse?

4. What kind of People live in the Country studied?
   - *a*. Their Appearance.
   - *b*. Their Race.
   - *c*. Their Habits.
   - *d*. Their Occupation.

5. What Vegetable and Animal Life are found there?
6. What Important Articles are produced?
7. What Commerce has been developed?

II. Why are these Things produced and exported? Because of its

1. Position.
   - *a*. Zones, Latitude, and Longitude.
   - *b*. Surrounding Waters.
   - *c*. Surrounding Lands.
2. Climate.
3. Surface and Soil.
4. Drainage.

III. The Political Divisions.
   - *a*. Population.
   - *b*. Industries.
   - *c*. Prominent Cities, etc.

IV. Journeys.
V. Reviews.

In teaching by topics, the globe and the map are in constant requisition. Teachers and pupils frequently work together with open books. The young scholars, with a little help, can find the position of the country on the globe; its direction from our own; its comparative size; the political divisions; principal towns, mountains, rivers, and various bodies of water. If the children learn to name the various political divisions, towns, mountains, etc., in some particular order, — as, for instance, the countries of South America thus: Colombia, Venezuela, Guiana, Brazil, Paraguay, Uruguay, Argentine Republic (Patagonia), Chili, Bolivia, Peru, and Ecuador, — it will greatly assist them in remembering the locality of the places, and turn the acquisition of these facts from drudgery to pleasure.

In the last four topics, more assistance from the teacher will be needed. Nothing will give greater zest to the work than to have the scholars make a progressive map as they proceed with their study, gradually filling it up. As fast as facts are learned, they are written or printed upon the map. (See p. 118.) This is a most effective and delightful way to impress the lesson upon the memory. If the scholars are too small and inexperienced in drawing, to sketch a fair

outline of the country, the teacher should supply them with prepared outlines, or models of the outline cut from paste-board. (See p. 91.)

We have used for years, with pupils averaging from thirteen to fourteen years of age, the following list of topics; and we have never found it too complicated or too long for our purpose.

SCHEDULE OF TOPICS. No. III.

(For the fifth and sixth years of study.)

1. **Brief History.**[1]
2. **Striking Characteristics.**[1]
3. **Position, etc.**
   1. Hemispheres.
   2. Zones.
   3. Latitude and Longitude.
   4. Shape.
   5. Absolute and Comparative Size.
   6. Diagram, Outline — Progressive Map.
4. **Surface**
   1. Highlands.
      1. Mountain Systems.
         1. Ranges.
         2. Separating.
         3. Slope.
         4. Direction.
         5. Peaks.
         6. Heights.
         7. Volcanoes.
         8. Analogies.
      2. Plateaus.
      3. Deserts.
   2. Lowlands.
      1. Plains.
      2. Lowlands on Coast.
   3. Draw Profile.
   4. Draw and Print on Progressive Map.
5. **Drainage.**
   1. Water Partings.
   2. River Systems.
      1. Source.
      2. Course.
      3. Length.
      4. Navigable.
      5. Branches.
      6. Peculiarities.
   3. Lakes.
   4. Draw and Print Names on Map.

[1] If the pupils have never studied the country before, topics No. 1 and 2 may be used at the end, as a review, the pupils to do most of the work.

- **6. Political Divisions**
  1. Named in Order.
  2. Capitals.
  3. Principal Towns.
  4. Print Names on Map.
- **7. Natural Divisions**
  1. Border Waters.
     1. Oceans.
     2. Seas.
     3. Gulfs.
     4. Bays.
     5. Straits.
  2. Projections, etc.
     1. Peninsulas.
     2. Capes.
     3. Islands.
  3. Isthmuses.
  4. Print Names.
- **8. Climate**
  1. Causes.
     1. Latitude.
     2. Elevation.
     2. Mountains.
     4. Slope.
     5. Winds.
     6. Moisture.
     7. Currents.
     8. Surface.
  2. Peculiarities.
  3. Healthfulness.
- **9. Life**
  1. Vegetable.
  2. Animal.
  3. Human.
     1. Races.
     2. Population.
     3. Occupation.
     4. Language.
     5. Manners and Customs.
     6. Education.
        - Literature.
        - Science.
        - Arts.
     7. Religion.
     8. Government.
- **10. Productions.** — Printed on Progressive Map.
- **11. Commerce** (Foreign or Domestic.)
  1. Exports.
  2. Imports.
  3. Commercial Towns.
  4. Routes of Commerce.
     1. Land.
     2. Water.
  5. Peculiarities, etc.
- **12. Prominent Cities.**
- **13. Journeys**
- **14. Comparisons.** — Throughout on every Topic.

As a class advances in the topical study of geography, the pupils become more and more delighted with this method of learning about different countries, and more and more anxious to enter still deeper into the study. This is done in No. III. by enlarging the subdivisions of the schedule so as to enter more fully into the details of each topic.

In the schedule mentioned above, great prominence is given to *surface*, because an accurate understanding of this subject furnishes the key to the understanding of the next subject, *drainage*, and also explains many facts connected with the climate, the life, the productions, the occupations, and even the locality, of the cities. Hence the natural order is preserved by placing *surface* before these other subjects. No two teachers would probably agree in reference to the best order of arrangements for some of the less prominent topics, such as political divisions, striking characteristics, natural divisions, journeys, etc. No one particular arrangement of these subjects is essential for success in employing the topical method. Political divisions may be learned before *surface*, or afterward, as the teacher prefers. *Comparison*, in our schedule, stands at the end of the list; but the wide-awake teacher will make all possible comparison throughout the study of the country. Any teacher, after these hints and illustrations, can arrange for himself a set of topics which will probably be better adapted for his own use than any list made by another.

PRACTICAL SUGGESTIONS

When a teacher begins the topical method with a class which has been accustomed to study almost entirely from the text-book, he will find it necessary to proceed very

slowly at first, because this way of preparing lessons is so strange, and different from memorizing the printed page. The pupils are at first obliged to learn both the geographical facts, and also to learn how and where to find these facts.

It has been our custom when taking up the topical method with a class unaccustomed to its use, but which has studied geography for several years, to have the class supplied with large blank-books, and then to say to them, "Let us endeavor to make a new and better geography of North America (for instance), than the one printed in the text-book recommended by the committee." All are delighted with the plan, and enter into its accomplishment with wide-awake zeal, so happy are they to *do something*. At first, the teacher will need to go over each lesson carefully with the class, giving assistance wherever and whenever needed, which, by the way, can be done only after careful preparation. Remember, however, never to tell a fact which can be found out from map, picture, or table of statistics, in the dictionary or gazetteer.

e. g., Instead of telling the class much about the surface of South America, show them a physical map of the same, or better, a raised map, or better still, make them a sand or clay map; and as they look at it, ask them questions, or impart information about the highlands, plains, mountains, peaks, etc. But the names of the mountains, the peaks, the directions of the mountain-chains, etc., can be learned from the map, by the use of the eyes. Again, instead of telling them what capes to learn, or asking the silly questions printed in most geographies about the capes, direct the pupils to make out a list of the most prominent capes, writing them down in order, beginning at some fixed point, like

the north-west corner on the map, and going eastward; then call upon the dullest pupil to read his list, and by and by the smartest pupil to add, or correct mistakes, till the revised list is prepared to be copied into the blank-book. Then the class can be drilled in learning these names by asking pupils to recite them orally, name them as another pupil points them out from the wall-map, write them from memory, or write them on the outline-map.

If the teacher has prepared himself as he should, with several other geographies, different maps, a scrap-book, a few pictures, books of travel, specimens, etc. (see Five Years' Course in Chaps. XI., XII.), he will be ready to help any discouraged pupil by putting into his hand, at the right moment, the right book, page, piece of paper, picture, or specimen, or to read some additional piece of information just when the minds of all are anxious to receive it.

After a few lessons, the pupils will begin to delight in this manly, self-reliant method of study, and before even the first grand division is finished, the class will surprise the teacher by the amount of work they can easily do without help. The second grand division will be almost entirely prepared by them, provided the teacher can supply the necessary books, etc.; and as fast as prepared, it will be learned so as never to be forgotten, while the learning of it will be as enjoyable as a favorite game. For additional practical suggestions in using the topical method, see Chaps. XIII., XIV., and XV., on North America.

CHAPTER IV

ADVANTAGES OF THE TOPICAL METHOD

THE rote-system, like other systems of its age, made more of the forms and symbols than of the things symbolized. To repeat the words correctly was every thing, to understand the meaning nothing; and thus the spirit was sacrificed to the letter. — *Herbert Spencer.*

BOOKS FOR CONSULTATION

Boyer's How to Study Geography.
Brooks's Normal Methods.
Carver's How to Teach Geography.
Crocker's Methods of Teaching Geography.
DeGraff's Development Lessons.
Geikie's Methods in Geography.
Hewitt's Pedagogy.
Hopkins's Educational Psychology.
Parker's Talks on Teaching.
Partridge's Quincy Methods.
Thring's Theory and Practice.
Wickersham's Methods.
Keltie's Applied Geography.
McMurry's Special Method in Geography.
Redway's New Basis of Geography.

CHAPTER IV

ADVANTAGES OF THE TOPICAL AND OBSERVATIONAL METHODS

DISADVANTAGES — FIRST ADVANTAGE, REQUIRES CAREFUL PREPARATION — THE BEST PREPARATION — ILLUSTRATION — UNBOUNDED ENTHUSIASM — STUDYING AND THINKING FOR THEMSELVES — EXTRACTS — OTHER MATTERS TAUGHT — STANDS THE TEST OF EXAMINATIONS — QUESTIONS — PARTICULAR TEST — MAPS — PRACTICAL SUGGESTIONS — A READING HOUR — SUBJECTS ON WHICH THE PUPILS READ.

WHEN, sixty years ago, Ritter began his great work in geography referred to in Chap. II., he found his fellow-teachers slaves to the text-book, and teaching a lifeless mass of facts about countries and places: he introduced the topical method of study, comparison, classification, original investigation, and observation of Nature herself. Guyot has done for America what Ritter did for Germany.

I. TOPICAL METHOD

The alleged disadvantages of the topical method of teaching geography are so insignificant that, in passing, only one need be noticed. It is said that this method requires more time than the question-and-answer method. This is usually true of the first country taught in this way, because the method is new to the scholar, and the amount of information given is so much greater than in any text-book; but subsequently there is considerable saving in time effected by the new method. An enthusiastic teacher *could* give to the topical teaching of a country an almost unlimited amount

of time. The writer has known two months to be thus spent on one continent, the interest of the class never flagging for a moment. On the other hand, he has known two continents like North and South America reviewed, from the work of previous classes, in six lessons, and at the end the scholars showed more geographical knowledge of the countries than they would have exhibited after a month's tedious study of the text-book.

When the amount of information retained by the pupils is considered, the topical method, even at first, is the more economical. When the amount *taught and retained* is considered, the topical method, as soon as it becomes understood by the class, requires far less time than the question-and-answer method. This objection is therefore of no weight.

The *advantages* of the topical method, like the beauties of Nature, are new and fresh every morning. Some of them can only be mentioned, and only need to be mentioned to be appreciated by those who have taught in this way, although they may have little influence over the doubtful and conservative. The topical method gives the teacher employing it the greatest pleasure and satisfaction in his work : it lifts him above dull drudgery and mere routine, into the upper, crystalline atmosphere of intellectual enjoyment and self-satisfying work.

Our own experience with this method of teaching has emphasized the following as the most important advantages arising from its employment.

1. The Topical Method requires Careful Preparation on the Part of Teachers as well as Pupils.

A large part of the poor teaching in the world arises from lack of preparation by the teacher. In the topical method the teacher undertakes to supplement the book, encourages questions, and stands ready to answer them. He must then come to the lesson full of the subject, and overflowing with the freshest thought and the most recent facts and theories. To find this knowledge he must search through numerous books, magazines, and newspapers, cutting and collecting the wheat as he goes, searching for cause and effect, making comparisons and classifications as the subject suggests.

The best preparation for teaching geography is, of course, travel. Humboldt and Ritter were the greatest geographers; they were also great travellers. A teacher who has been "abroad," "out West," "down South," or even to Montreal or to the White Mountains, will teach with much greater success than one who always stays near home. A study of nature, even about one's own locality, is suggestive and important. The salaries of most teachers, however, are too small to allow extensive travelling, and hence the majority of the fraternity must rely upon the eyes of others for their knowledge of the facts of this science.

Books of travel, copiously illustrated, are now published in reference to nearly every part of the world. They can be purchased by teachers, or clubs of teachers, *a few at a time*, if not accessible in public libraries. An extended list of such books, and also books of geographical science, will be found in Chap. XX.

Among books of daily necessity, both for teachers and

scholars, we place books of reference, such as Lippincott's Gazetteer; Browne's Manual of Commerce; Appletons' and Chambers's Encyclopædias; Richardson's School Manual of Modern Geography, London; Johnston's Descriptive Geography; Compendium of Geography and Travel (6 v.), published by Stanford; common-school geographies, the best of which are Guyot's, King's, Dodge's, Redway's, Frye's, Our World No. 2, and Tarr's; and geographical readers such as Picturesque for young scholars, and Carpenter's for more advanced scholars.

The successful teacher must not only know where all these geographical facts can be found, but he must have them at his command so that he can stand before the map or the blackboard, and conduct the recitation, if need be, with little or no reference to books. To do this requires tact, judgment, and, beyond all else, untiring energy and enthusiasm. If it were proper, the writer could give the names of a score or more of teachers who have so high an ideal of the nobleness and possibilities of geography that they daily make such preparation, and daily reap the pleasure and satisfaction of seeing their pupils really enjoy the geographical recitation-hour.

One of these cases is especially worthy of mention. The school is situated in a New-England city at some distance from Boston. The teacher has a class corresponding in advancement to a seventh grade in a Boston grammar school. It is composed principally of the "foreign element," children from poor, miserable homes, without books or the comforts of civilized society. A more difficult class of children to interest in geography could not be selected; yet they have a most remarkable knowledge of, and love for, this study.

This wonderful interest in a subject frequently deemed the dryest, is owing of course to their teacher, and what he has done for them.

He has prepared, at great expense of time and money, a solar camera and some four hundred valuable transparent pictures, a few of which, at a lesson, are thrown upon a large screen in front of the scholar, and carefully explained. Around these pictures are grouped the great facts of geography; not the little details of locality and statistics, but the soulful facts of comparative and physical geography. These pictures are of the same quality and excellence as those used by Messrs. Elemdorf and Holmes in their high-toned entertainments. The pictures are shown, on an average, about once a week. Think of the influence upon such a class of pupils, of seeing week after week the most beautiful pictures that art and nature can produce. The unquestionable success of this experiment shows the power of pictures combined with study, in the schoolroom, to awaken an interest and impress facts, and warrants a similar use by combined bodies of teachers (to reduce expense), in other parts of the country.

2. The Topical Method creates Unbounded Enthusiasm among the Pupils.

The dull, sleepy boy wakes up; the most indifferent girl is anxious to learn in this new way. There is something for the fingers to do, as well as the eyes, in copying into the blank-books topics and information given. Each pupil becomes desirous to contribute information required from newspapers, from other books, or from parents. Scholars no longer dislike this noble study. On the contrary, they wish

to study it more than its proportional time. The teacher sometimes is actually obliged to check their enthusiasm, and remind the class that there are other studies of importance besides geography.

3. The Topical Method is Philosophical and Natural.

It appeals to the understanding, as well as to the memory. It begins with the known, and proceeds to the unknown. Subjects are taken up in their natural order. Position is studied before surface; elevation before drainage; climate before production. Children are pleased with comparisons and sharp contrasts; they ask for cause and effect; they are hero-worshippers, fond of personal adventure. The topical method naturally leads them to such information.

4. It encourages Pupils to study and think for themselves.

This is perhaps one of its greatest advantages. In following the text-books the scholar simply commits to memory the words, with little regard to their meaning. When studying topically he memorizes ideas and facts which he is to clothe in his own language. He becomes a searcher and discoverer of truth. He comes in contact with other books, and soon dispels the foolish delusion that his own particular text-book is the only book in the world containing geographical information.

The difference between the two methods is well shown by the following illustrations from school life. In a certain school in this city, the "fourth class," which had studied geography for two and a half years, was taught South America by the topical method. After the work of teaching was finished, the scholars were requested to write what

they knew about that country. Below we give two extracts from the papers then prepared. These extracts are given just as written by the scholars, without any corrections.

SOUTH AMERICA (*a*).

South America is a great peninsula next to the largest one in the world. The only thing that prevents it from being surrounded by water is the Isthmus of Panama, a narrow neck of land joining North America to South America. South America has no large gulfs and bays except lake Maracaybo for that is really a bay; so it is not very thickly settled by white people. South America being mostly in the torrid zone has a very warm climate. It consists of three mountain chains, the Andes Mts. Parime Mts. and the Brazilian Mts. and three plains, the llanos, selvas, and Pampas. The Andes are a large system extending along the whole of the western coast. They are a part of the large system in North America, and are very steep and dangerous in climbing. But they have an animal called the llama which is a very sure-footed animal. There are many volcanoes and many cities have been entirely destroyed. There are great many high and wide table-lands or plateaus among the Andes and many cities are built upon them because the air is more healthful. Quantities of silver and copper are found among the Andes. The people, etc. etc.

M—— A—— B——.

SOUTH AMERICA (*b*).

South America is a large peninsula. There are high mountains all around the margin. The Andes are on the west, the Parimas on the north, and the Brazilian Andes on the east. There are high table lands among the Andes, with a good many villages and towns on them. The table land is often named for the town that is on it. There are a great many gold and silver mines among the Andes. Lake Titicarca is the highest large lake in the world. They get a great many diamonds from the rivers among the Brazilian Andes.

The three principal rivers are the Amazon, the Orinoco and the La Plata. The Llanos are along the Orinoco, and are covered with coarse grass in the wet season and with dust in the dry season. In

the wet season all the rivers overflow, and grass grows taller than a man. There are herds of horses and cattle feeding on the grass, and there are a great many snakes and reptiles. In the dry season all the grass withers up, and all the herds are driven to the mountains. All the snakes and all the animals bury themselves in the ground, and the insects all die. There is not a tree to be seen, except along the river banks. The selvas, or wooded plains, etc., etc.

C—— W—— S——.

Under the care of another teacher, this same class studied Asia from the book, and then wrote what they knew about that country. Two extracts are selected from this set of papers prepared by the same scholars.

ASIA (*a'*).

The outline of Asia is very irregular, but the seas, gulfs, and bays, do not extend so far into the land, as those in Europe.

The principal mountains are the Himalaya, Altai, Thian Shan and the Kuen Lun.

South of these mountains is a great desert plain extending from west to east. It is made up of salt, salt marshes, sand and gravel. South of this are three peninsulas.

The rivers are divided into three classes, those which flow into the Indian Ocean, those which flow into the Pacific Ocean, and those which flow into the Arctic Ocean.

The climate is divided into three classes, the northern, southern and central.

The religions are Pagans and Mohamedans.

The divisions of Asia are Asiatic Turkey, Asiatic Russia, etc.

M—— A—— B——.

ASIA (*b'*).

Asia is the largest of the five Grand Divisions. The Gulfs and bays do not extend as far into the land as in Europe.

The four principal mountain chains are the Himalaya, Thian Shan, Altai, and Kuen Lun.

The five seas on the Eastern coast of Asia are Behring Sea, Sea of Ochotsh, Yellow Sea, China Sea, and Sea of Japan. The Arabian Sea and the Bay of Bengal are on the southern coast of Asia. The rivers flowing north are, Obe, Lena, and Yenesei. The rivers flowing east are, Amoor, Hoang-ho and Yang-tse-Kiang. Those flowing south are, etc.

The principal commercial city of Asiatic Turkey is Smyrna. Jerusalem is the holy city of the Mohamidans. Mecca is the holy city of the Jews.

Asiatic Russia is a very cold country, etc.

C—— W—— S——.

These scholars were between ten and eleven years of age, and the selections are taken from the first part of each paper. The characteristic differences between *a* and *a'*, *b* and *b'*, are much more apparent from an examination of the full set of papers than from two selections. The first noticeable difference is that the average amount written was much larger when the class was taught topically than when taught from the text-book. This shows that there was much greater interest in South America than in Asia, — a fact contrary to the common experience of teachers, when the country alone is considered. There is a much greater difference in the facts presented and the language used, in *a* and *b*, than in *a'* and *b'*. In the one the text-book was closely followed; in the other, information was obtained from many different sources. In the former, the appearance of the country, the productions, and the people are the prominent topics remembered; in the latter, the names of natural divisions and the localities of places. The one gives us some variety in the sentences; the other none, *is* and *are* being the common verbs employed. In the one, an intelligent knowledge of the country worthy of a first class is

exhibited; in the other, a mere memorizing of the dryest details from map and description. The difference in the teachers does not satisfactorily account for this vast difference in results. The method, as well as the teacher, made the great disparity.

5. The Topical Method enables the Instructor to teach Something besides Geography.

Charles Barnard, in his graphic description of the model primary school given in "The Century Magazine," shows how fully, by the oral and topical method, something besides reading and numbers is taught in our best Massachusetts schools. He closes his article with this sentence: "The American boy from the new schools will be a master at many trades, because he has been taught to use his imagination, to observe, to use his senses and his mind in a workmanlike manner."

In teaching geography on the same plan, by the topical, oral, and objective methods, the pupil receives instruction and practice in writing, drawing, spelling, dictation, reading, and the most practical kind of oral lessons. Better than all these advantages, this method assists the teacher in elevating the taste of his scholars in reading. By a little effort the dime novel, half-dime novel, and all that worse than trashy literature, may be supplanted by books written by such authors as Livingston, Baker, Stanley, Knox, Taylor, Abbott, Greeley, Kane, Hayes, Miss Bird, etc. To accomplish this, it is not enough for the teacher to recommend certain books: he must either place the books in the hands of his scholars, or he must supply them with the catalogue-number of those books. It is not an easy matter to obtain

these numbers, as any teacher can learn by trying to ascertain the correct numbers for the latest fifty books on travel, in any large city library. Mr. Cogswell, the former superintendent of schools in Cambridge, placed teachers and scholars in that city under great obligation, by printing in his report for 1882, not only the titles of many choice books for general reading, but he has given the catalogue-numbers for the Cambridge Public Library. It is to be hoped that other superintendents will do likewise.

6. The Topical Method always stands well the Test of Examinations.

The length of time during which impressions remain fixed upon the memory depends upon the degree of attention given to the subject, and the interest felt by the learner. The association of ideas, especially by way of resemblance or dissimilarity, the learning of facts in their natural or consecutive order, are made very prominent by this method, and the memory is thereby greatly aided. The writing of information in blank-books is one of the best ways to impress such information upon the memory. The testimony of hundreds of pupils taught in this way invariably is, that the topical method makes the facts of geography "stick."

Examinations in geography, as well as in other studies, we maintain, are helpful to teachers and scholars. It is wise to give some kind of a test at the close of each country taught. We are yet to find a class which will do less study on account of the expected examination. If the pupils are young, the test should be short and simple. Perhaps one question — Write all you know about this country, and draw a map, using the pasteboard outlines —

will be sufficient. In the higher classes a severer test should be given.

In Boston schools, scholars thus taught always pass good examinations upon the questions presented by the board of supervisors, because this method creates wide intelligence, sets scholars to thinking for themselves, and using their imaginations so they can answer indirect as well as direct questions upon the countries taught. We again illustrate from our own experience.

During the past year, a teacher of a lower class requested us to examine her pupils upon Europe. Twenty difficult questions for that class were prepared as an experiment, and given with the consent of the teacher, both of us expecting a poor result, if not a failure. These were some of the questions: 1. By what route would you go from Boston to England? 2. How long would it take to go by steam? 7. In what part of that country are there few mountains? 13. How does the climate of England differ from that of New England? 18. In what countries of Europe are to be found grapes, flax, and olives? 19 and 20. Write something about the schools or the people of some part of Europe, or write out an imaginary journey.

The average age of these scholars was eleven years; and the average per cent upon such questions, eighty-seven.

Recently we gave a similar test upon South America, to a class taught by the topical method. Experts called the questions very difficult for the age of the class: they had studied geography two years and a half. Several of the questions and answers are given as illustrations.

2. How could a person go from Boston, or from New York, to South America?

"If they lived near the eastern coast of North America, they could take a vessel from the ports on the Atlantic coast, and if they lived on or near the Pacific coast, they could take a vessel from one of the ports on the Pacific Ocean, or if they lived in the interior, they could take a vessel, and cross the Gulf of Mexico to one of the ports on the northern coast of South America."

3. In going, what ocean-current would be crossed?

"In going from Boston or New York, you would cross the Gulf Stream."

5. Tell about the surface of South America.

"The surface of South America in some parts is very mountainous, having on the western coast the Andes, which are a part of the Rocky Mountains in North America. They are very high, in some parts having volcanoes. In among the mountains is a large plateau, which is a thousand miles long. It contains Lake Titicaca, which is supposed to be the highest large lake in the world. The Parime Mountains are in the northern part of South America. They are not so high as the Andes, but not so low as some others I will tell you about. The Brazilian Andes are in the eastern part of South America. They are very low. All the way from east of the Andes, as far as the Brazilian Andes is a vast plain."

7. Where and what is the principal water-shed?

"The Andes, on the western side of the country."

11. What capitals on the western coast are inland, and why?

"Bogota is in the United States of Colombia, and it is in the centre. Quito is the capital of Ecuador, and it is situated right under the Equator. Bolivia is now on, or used to be situated on the Pacific coast. Its capital is Lopaz, and that is situated in the interior. Peru is one of the countries that has an inland capital. It is Lima, which is the largest city west of the Andes. Chili is on the western coast. Its capital is Santiago, which is very near the Argentine Confederation. These capitals are all in the interior, because it is so much more healthy there than on the coast, where it is moist and unhealthy. There are mountains in the interior, and cities can be built there."

12. Describe one of the noted plains of South America.

15. What are the habits of the races in that country?

"The whites are for the most part an idle sort of people, fond of swinging in their hammocks and smoking. In the settled states, the Indians perform most of the labor. The negroes were brought into the country for slaves, but most of them have been freed."

16. What causes affect the climate, and how?

"All above the thirtieth parallel of south latitude, the winds blow from the east, and the Andes Mountains being on the west side, take the moisture from the winds as they get them, so the country on the west side is dry. All below the given parallel, the winds blow from the west, so the country on the east of the Andes, below thirty south latitude, is dry."

18. Tell some facts about the growth and appearance of one of the natural productions.

"The tree from which coffee comes grows to be very high, but it is usually kept down to about five feet, by cutting, so that the berries can be easily picked. The fruit grows very luxuriantly, blossoms and ripe fruit being seen on the tree at the same time. The berries are red when ripe, and are sweet and good to eat."

19. What books have you read or heard read about South America? What pictures have you seen outside your text-book?

"I read something about South America in Harper's Monthly." "I have read the book called 'The Voyage round the World, with Sunbeam.'" "I have seen the picture of the coffee-plant, and cocoa."

20. What persons were connected with the history of South America?

"Columbus discovered South America. Bolivia was named after General Bolivar, under whose careful guidance they threw off the yoke of Spain."

The Examination

in the graduating class may be divided into three parts.

In Part I. the teacher selects some one of the topics of the schedule, as, for instance, Surface, or Life, and asks the class to write all they can upon it. This is a grand exercise in composition. In Part II., definite questions should be asked or subjects assigned; e.g., —

What are the striking characteristics of Asia?

Write a page or more about the plateaus.

Mention the rivers in order, and compare any two of them.

What have you learned from pictures or objects seen about the country?

Mention the leading exports of Japan and India.

In Part III., a memory map should be required. This request may be thus worded: —

Draw from memory a map of Asia. Print upon it the capitals, principal towns, four mountains, four rivers, two each of the natural divisions, the principal productions, and underline the exports and exporting towns.

We have generally, at the close of the instruction upon geography, given the graduating class a severe and comprehensive test of their knowledge. Last year the test assumed this form: Each scholar was furnished with a blank outline map of the world, drawn on Mercator's Projection, published by D. C. Heath & Co., Boston. The following were some of the questions given: —

2. Draw the prime meridian in its correct place upon the map; the meridian 20° W.; 100° W.; 100° E.

3. Mark degrees of parallels and meridians.

4. Mark noon for prime meridian, and the correct time at same moment for the other meridians.

5. Show by black dots the voyage of the "Vega."

7. Show by arrows the direction of principal winds.

8. Print the names of principal ocean-currents, and show direction by arrows.

9. Draw principal mountain ranges in each continent, print names of ranges and important peaks.

14. Show in red ink a practical route around the world.

15. Show other important commercial routes.

16. Show by red crosses the situation of volcanic districts.

19. Print in blue ink principal animals in each grand division.

The result obtained is shown in one case on the next page.

These questions show the wide range of instruction attempted. No single text-book, only the topical method, enables teachers to ask questions of this character. Scholars thus taught not only know names and localities, but interesting facts connected therewith. This particular test condensed into a single page a vast amount of information, which could be rapidly examined and corrected. Twenty questions were asked; and more than half the class drew each over fifty lines and marks upon the blank map, and printed over two hundred names, most of which were correctly spelled and located. See Figs. 3 and 4.

PRACTICAL SUGGESTIONS.

An illustration can be given from personal experience for the encouragement of other teachers. We began several years ago to read to our classes from various books of travel, such as Miss Bird's "Japan," Mrs. Brassey's "Sunbeam," Prime's "Around the World," etc. The results were excellent. What was read one day was recited the next, or brought in in the shape of a composition, being written out from memory.

We then conceived the idea of having the pupils read to us, as being much more for their advantage. Our efforts were rather discouraging till we began to supply the class with the library-numbers of the books. These were written upon

Fig. 3.—The Outline of the World, to be filled in for Final Examination.

(¼ real size.) (See pp. 69 and 70.)

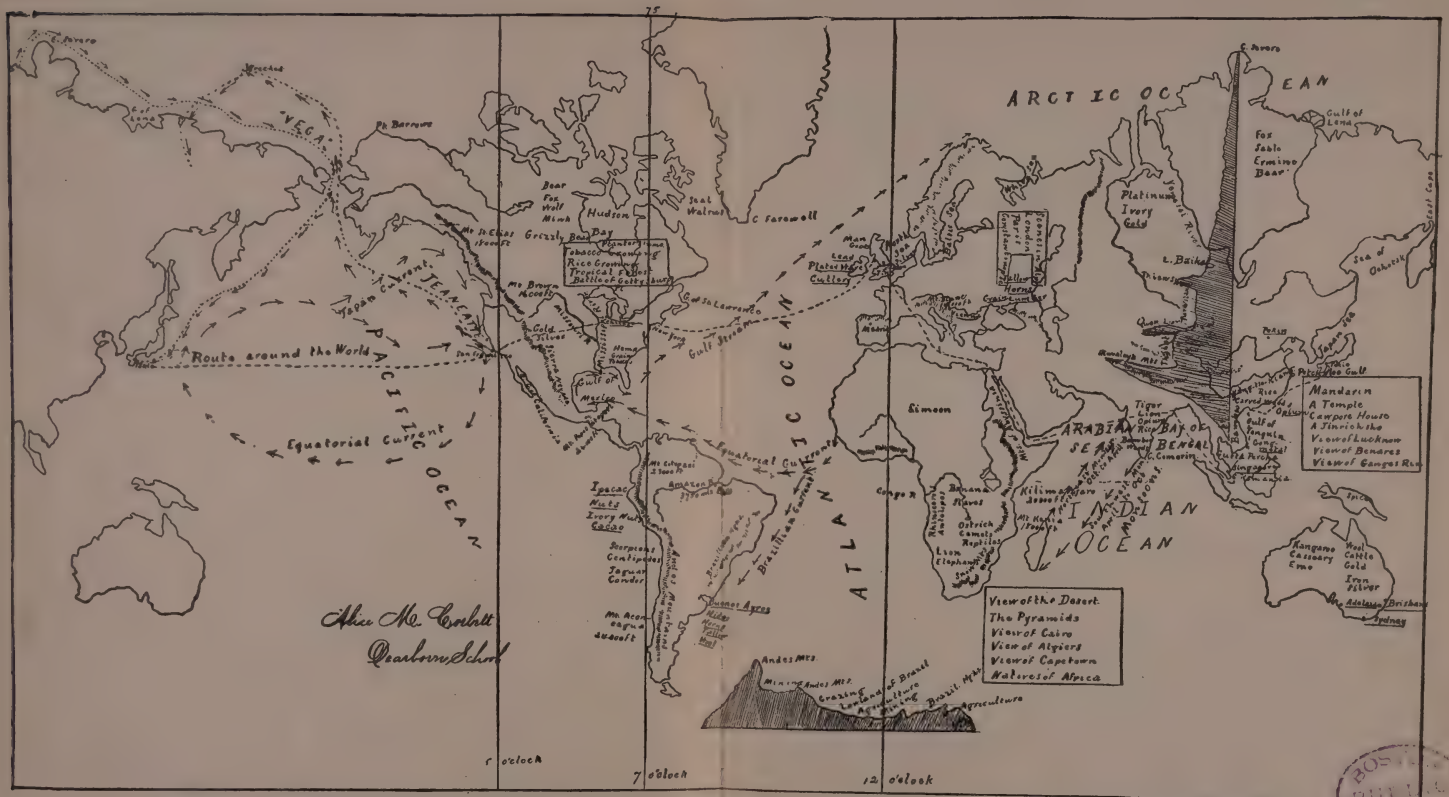


Fig. 4.— A Reproduction by the Photographic Process, of Miss Corbett's Map, after answering the Examination Questions

Mentioned on pp. 69 and 70. (¼ real size.)

the blackboard without the titles, or furnished by underlined catalogues, or written catalogues accessible to all.

Their love for good reading was thus developed. During the rest of the year, the class read the best books in history and literature. The pupils who began the year with Cameron, Baker, Stanley, Nordenskjöld, Lansdell, Taylor, Ober, Marcoy, Du Chaillu, finished the year by reading Macaulay, Hume, Knight, Dickens, MacKenzie, Yonge, Abbot, Guizot, Bancroft, Cooper, Irving, Prescott, Towle, Longfellow, Whittier, and Scott's poems and novels.

Our present plan is to encourage and direct the reading, by appointing for the last session of the week a *"reading-hour,"* at which the pupils are expected to be ready to read from books of travel, magazines, etc., short selections relating to the geography of the country then under consideration, instead of reading from the regular reader. Our experience shows that this method teaches pupils to call words much more rapidly than by using the reader, that it creates great interest, that both pupils and teacher learn many new facts about the country and the people, and that the pupils make remarkably good selections.

The number of books read under these circumstances will vary somewhat with different classes. Two years ago a class of forty pupils read ninety books upon Africa during six weeks' time, and over two hundred upon the other countries during three and a half months' time, making about three hundred books read in five months.

The next class were better readers. They read upon Africa in six weeks a hundred and fifty-three books; upon Asia in November, a hundred and fifty books; upon the other countries, in the two remaining months during which geog-

raphy was taught, a hundred and fifty books ; making a total of four hundred and fifty-three books read by forty pupils in five months.

Some of the topics presented at the " reading-hour " were the following : viz., —

" Balize," from Stephens's Incidents of Travel in Central America, p. 11.

" Ascent of Popocatapetl," from Brocklehurst's Mexico To-day, p. 104.

" Among the Esquimaux," from Hayes's The Arctic Boat Journey, p. 121.

" Ascent of the Matterhorn," from Whymper's Scrambles amongst the Alps, p. 150.

" Manners and Morals of Stockholm," from Taylor's Northern Travel, p. 210.

" Schools of Germany," from Brown's American Family in Germany, p. 59.

" Caste in India," from Prime's Around the World, p. 244.

" The City of Havana," from Hill's " Cuba and Porto Rico," chap. 12.

" Rural Life and Labor," from Dawson's " German Life in Town and Country," p. 68.

" Peasant Characteristics," from Palmer's " Russian Life," p. 95.

" In a Siberian Town," from Fraser's " Real Siberia," p. 32.

" Home Life," from Scherer's " Japan To-day," p. 85.

" Russian Homes," from Gautier's " Russia," p. 191.

" Catching Black Sea Bass and Tuna," from Holder's " Life in the Open," p. 242.

" The Banyan Tree," from Workman's " Through Town and Jungle," p. 40.

" Suez Canal," from Manning's Land of the Pharaohs, p. 177.

" The Gorilla," from Chaillu's Equatorial Africa, p. 394.

" Cocoanuts," from Brassey's Tahiti, p. 61.

" Sugar Estate," from Ober's Camps in the Caribbees, p. 229.

" India Rubber and its Preparation," from Keller's Amazon, p. 92.

" Southern Andes," from Dixie's Across Patagonia, p. 174.

II. OBSERVATIONAL METHOD.

We have already called the attention of the reader to the order of development in the child mind (Chap. 1). Children gain knowledge at first through the senses. They see, taste, and hear. They like to handle things. Sensation leads to movement and general activity. Later in life they learn to reason and think.

Observational and concrete work therefore should precede study; it should come before definitions and abstract statements. The "What" should precede the "Why." Professor O'Shea, of the University of Wisconsin, says: "Educators ought to provide more opportunities for children to come in contact with concrete things through the senses."

Dr. Redway says, in "The New Basis of Geography," "There is a wonderful strength that comes from the knowledge of contact; it is as solid gold compared with paper tinsel."

Observational work in geography can be carried out in a variety of ways. 1. Perhaps the easiest method is to begin in the school-room with the observation of pictures. Larger pictures should be selected for this purpose, and the children taught to divide the picture into foreground, background, centre, left side, etc. The teacher may then question the class in reference to the objects to be seen in each part. One or two lessons on different pictures will greatly increase the observational powers of the children.

2. From pictures to specimens is a very easy step. (See p. 137.) In the lessons on specimens each child at first should have a specimen on his desk to observe. It may be a leaf, a piece of wood or granite, or a dried

grasshopper. Even a cube or a foot ruler furnishes a good object.

Young children easily learn to identify the common forms of rock, such as slate, limestone, lava, sandstone, marble, mica, coal, quartz, sulphur, and granite. The uses of these different rocks can be learned at the same time. Each school should study the rocks in its own locality.

The children should be taught to discover characteristics through simple questions asked by the teacher, who should impart information only when the children cannot get it from the specimens.

School museums in glass cabinets, containing a variety of objects from other countries and distant parts of our own land, become sources of interest and information. If the specimens are labelled and accessible to the teachers they are sure to be used.

3. The observational powers are further developed by making a simple plan of the desk, school-room, school-house, school-yard, and then a map of the principal streets or roads near the schoolhouse. All this work helps the children to read and understand the lines and marks on a printed map. Simple contour maps of the elevations near the schoolhouse are most helpful.

4. Weather observations can be introduced very early. Very young children easily learn to tell about the clouds, temperature, rain, snow, direction of the wind, etc. These observations can be made daily and recorded in blank books or upon the blackboard. As the children grow older they easily pass from cloud observation to the moon and its phases, where and when it rises and its course through

the sky. Sun observations are somewhat harder. (See pp. 392, 399, 408, 413.)

Both weather and sun observations should be connected with CAUSES affecting climate. This can be done by leading the children to notice the remarkable changes in the weather, the alternation of heat and cold, the effect of the winds, the sun's position in the sky, the length of day and night.

5. Direction and distance can be easily learned through observation. (See p. 396.) Observation of sunrise and sunset help to fix east and west. Observing the noonday shadow fixes north and south. When these four points of the compass are well fixed, the class may be requested to make out a list showing the direction of well-known objects and places from the schoolhouse.

Foot and yard can both be used as units for indoor measurement and the rod and rule for outdoor measurement. The length and width of the school-room should be measured by the pupils and results compared. A rod should be laid out in the yard and measured in paces and then part of a mile paced from the schoolhouse to help fix the mile length. The teacher may need to give the children half and quarter mile lengths. Blocks and squares, in a city, can be used for these lengths. In the western states section line roads are always one mile apart.

6. Most of the observational work thus far has been accomplished in or near the schoolhouse. It is necessary now to go farther afield to develop the eye still more. Trips to a park, a field, the top of some elevation, a pond, lake, or shore are essential.

This method of study has recently become very popular in Boston (see new course of study in geography) and in many cities of Massa-

chusetts. It forms a part of the course in New York and Chicago; it is practised in every Normal School in the land, and has been followed for years in Germany and Switzerland, and recently in many parts of England. The general term given to this kind of geography is HOME GEOGRAPHY, or better, FIELD WORK.

It is of greatest importance that children gain at first correct concepts of the words to be used in this new study, such as "hill," "mountain," "island," etc. Correct ideas of these forms are obtained from nature only.

The first field lesson may take up land type forms such as plain, plateau, hill, valley, basin, slope, ridge, water-parting, island, peninsula, cape, isthmus, etc. The second may include brook, cascade, falls, bay, strait, current, shore, and other water forms.

A study of trees, grains, and plants offers plenty of sight-seeing. Shore and lake forms are excellent objects for observational study. The wild animal life about the schoolhouse is always interesting and can well be observed out of school hours without a teacher. The drainage of local fields and the action of fresh water upon the land in carrying mud, sand, or rock-waste to lower levels can be easily observed by the pupils with some help from the teacher.

The reason for the type forms, that is, their formation largely by water, ice, and wind, should now be considered and as many observations made as the locality permits.

The building up and the wearing down of the land, the matter of relief as shown in the formation of plains, shore lines, mountains, and valleys are excellent topics for outdoor study. The influence of relief upon man's life and business should always be brought out.

The products of gardens and farms about the schoolhouse, products of factories in the vicinity and transportation by land or water may next claim attention.

As the pupils grow older and are better trained in observational work they will reason and think and ask the *why* of things. Why do a number of railroads enter a town or city? Why are certain mills built there or mines opened? Why are ships coming and going? What are the reasons for their cargoes? The answers to these "whys" will surely lead to many geographical facts. It will probably be found that the mills were built because of water power or because raw material could be cheaply obtained. Commerce centered at a certain city because of a good harbor, etc.

Practical Suggestions.

The smaller the class the better the work in the field. One teacher can usually manage half a room. Two teachers are needed when forty-five or fifty children are taken at one time. There are advantages in having a private car, but it is not necessary. The wise teacher will plan to go and return when the regular cars are not crowded.

Teachers ought not to expect the same discipline in a field lesson as in the school-room. The children are likely to talk, but if the talking is about what they see, little harm is done.

After one or two excursions have been taken with the teacher, groups of children can be sent out to take observations by themselves. The children will soon form the habit of seeing land and water forms near the schoolhouse and on their walks. Reports should be required from the children in reference to what they see on these trips. A lesson out doors near the schoolhouse should be given before a long excursion is taken.

CHAPTER V

APPARATUS

THE foundation of all learning consists in representing clearly to the senses sensible objects, so that they can be apprehended easily.

Comenius.

BOOKS FOR CONSULTATION

Crocker's Methods of Teaching Geography.
Frye's Geography with Sand Modelling.
Geikie's Teaching of Geography.
Grove's Geography (Primer).
Parker's How to teach Geography.
Dolbear's Art of Projecting.

CHAPTER V

APPARATUS

ILLUSTRATION OF THE ROCK ISLAND ROUTE — HOW TO OBTAIN ADVERTISEMENTS — TRUNK LINE CIRCULARS — BLACKBOARDS, CRAYONS — OUTLINE MAPS — TRANSFER AND STENCIL MAPS — REYNOLDS'S CHARTS — RAISED ATLAS — CHARTS — THE RUBBER PEN — SCHOOL SOLAR CAMERA.

ONE day a poorly dressed boy handed his teacher a unique advertisement of the Rock Island Route, in the form of a first-class passenger ticket around the world, supposed to be issued by the Chicago, Rock Island, and Pacific Railroad, containing nineteen coupons, showing in large letters the important places on the route, and their distances from one another. The teacher, holding this in his hand, stepped to the board, unrolled it, and held it up before the class, telling them what a fine present Master O'Brien had just given him. He then asked the boys to open their geographies, and take, in imagination, a trip round the world as advertised on this supposed ticket.

New York was the starting-point. The class named the next important place, Liverpool. The teacher drew on the large blackboard outline map of the world, a wide, heavy red line from New York to Liverpool, and put down the distance on the line, and the average time it would take to make the trip. These figures were also placed on one side at the head of columns. Then the next section in the trip was taken, laid out and figured, the class becoming wonder-

fully interested. In ten minutes the distance round the earth, *via* the most popular route, was sketched and figured in miles and days. Afterward the class drew the route on the commercial map in the back part of their geographies. That class during the year never forgot how the world is circumnavigated for business or pleasure.

This little experiment shows how valuable the simplest object is to illustrate a point in geography, or to awaken an interest in a class.

Advertisements that can be obtained for the asking often contain plans, maps, or pictures, of immense value in the schoolroom. Each teacher should exercise a little energy and ingenuity in finding and obtaining such helps. The pupils of the class will become wide-awake partners in this enterprise, if the teacher explain the need and advantage to them of securing every possible helpful advertisement.

The writer has in his possession a large number of helps thus pleasantly obtained. A few are mentioned, to encourage teachers to work in a similar line. The complete addresses are not given here, because most of these particular articles have been already exhausted.[1]

One class within a week brought to school a fine picture of the Old Mill at Newport; a dozen colored cards showing the natural growth of the different spices; a perfect picture of a western prairie home; Florida scenery; several programmes of illustrated lectures; maps and itineraries by Thomas Cook & Son, New York; by Raymond, Boston;

[1] The writer once put a very gentlemanly book-agent to considerable expense and trouble by mentioning, in an article for an educational paper, some valuable picture the agent had been giving away with the list of books published by his firm.

the oldest house in America (1634); the Natural Bridge; sights in Burlington, etc.

But more valuable than these, are the circulars issued every year by the great trunk lines of railroads in this country, such as the Boston and Albany, Hoosac Tunnel, Grand Trunk, Pennsylvania, New York Central, etc. Several railroads publish each summer, about the first of June, a special pamphlet full of graphic descriptions, and excellent pictures, "for gratuitous circulation." The following are especially recommended as worth asking for: —

"All Along Shore," "Among the Mountains," "Lakes and Streams," "Vacation Days in Southern New Hampshire," "Hoosac Country and Deerfield Valley," "Resorts for the Vacationist," published by the Boston & Maine R.R. Company; "Union Pacific Tourist," by the Union Pacific R.R., Omaha; "The Apostle Islands," by the Wisconsin Central R.R., Milwaukee; "The Golden North-West," by the Chicago, Milwaukee, and St. Paul R.R., Chicago; "The Bouquet," by the Chicago, Burlington, and Quincy R.R.; "Shasta," by the Southern Pacific; also summer tours by the Erie R.R., New York; the West Shore, New York Central, Hudson River R.R., and all the leading *trunk lines;* "Guide to Washington," by Baltimore and Ohio R.R.; "A Ramble through Wonderland," by the Northern Pacific R.R., St. Paul; "The Heart of the Rockies," by the Colorado Midland, Denver.

No more useful apparatus can be found in the schoolroom than the blackboard. As it should be constantly used by the teacher and pupils, plenty of blackboard surface should be supplied, and this should be in all cases of the best quality. The best blackboard thus far examined is the

ordinary slate, provided it does not change its color. With enamel crayons, a person can shade on this blackboard as readily as with a good pen on paper. The blackboard can be washed at any time without injury. Excellent white enamel crayon for softness, and freedom from grit, is the Parmentar enamel crayon, made in Waltham, Mass. The best colored enamel crayon is the New York Crayon Company's. The enamel crayon should come into immediate use, because its introduction will lead to a much greater use of the chalk, especially the colored variety. The great objection to the use of colored crayon has been its dirtiness; but when a teacher can hold a colored enamel crayon in the hand all day, and not soil her fingers at all, she will be likely to use it for a great variety of purposes.

It is very frequently convenient to have a special blackboard for use in geography, on which the simplest outlines of the grand divisions may be drawn in permanent lines, representing the countries large enough for writing within, in their proper places, the names of prominent towns, of productions, natural divisions, facts about climate, etc. Superintendent Adams of Spencer accomplishes this by having the outline of the map painted, in old-gold color, on the regular blackboard, or on extra movable blackboards, which can be readily hung over the other boards. The surface of the blackboard possible in a room is thus greatly enlarged. Those who cannot afford these will find a very good substitute in the cloth blackboards, which have the advantage of being more easily handled. The material of which this board is made consists of strong cloth, covered with liquid slating such as is usually placed on plaster blackboards. The cloth blackboard is sold with this slate preparation on

one side, for sixty cents per square yard; on both sides, for a dollar per square yard. They are sold, all mounted, in Boston, at the J. L. Hammett Co., 250 Devonshire Street. Size No. 2, which answers well for North and South America or Africa, costs a dollar and a half. The blackboard, of course, is a blank when purchased.

The outlines of any country can be easily made upon it by tracing them with stencil maps, and then *painting* them over with some bright color in oil. One or two rivers and a chain of mountains may be added, and the map is finished. Europe may be drawn on one side, and South America on the other. We have seen this well done by young boys. If a *youth* about fourteen can make so good an outline map, it would seem that any *teacher* could easily make one for use next year. These maps wear well, although in daily use. With them the teacher can impart much information, and also give variety to the recitation. Pupils can be sent to the map to locate and express in writing, or by marks, various matters of information. In some schools these maps are used more constantly and profitably than any other piece of geographical apparatus.

One of the best recitations we ever heard in the geography of the United States was given in Mr. Lyford's school, Worcester, Mass.; the pupils indicating upon a similar map, in various ways, their answers. It was astonishing how much they could express upon the board in less than a minute.

In teaching the United States, great help is obtained by showing the class a variety of maps, such as can be procured free of the different railroad companies. The Chicago and Alton Railroad have given away thousands of their large standard-time map, so helpful in teaching this subject.

No form of apparatus is more useful than every variety of maps. Habenicht's are very good physical wall-maps, and Hughes' and "the Peerless" excellent political maps. As maps will be again considered, reference will only be made here to two special kinds, which come properly under *apparatus*.

Transfer and *stencil maps* are a great convenience for quickly and correctly making an outline of a country. A transfer map is made by tracing from a wall map of desired size, about three feet in length being a convenient size, a map of some country, as North America, for instance, giving rivers, lakes, mountains, political boundaries, etc. Produce this upon a large sheet of manilla paper, reversing the sides so the eastern boundary — Newfoundland, etc. — will be on the left, and California on the right, north being still at the top. Line in heavily with common colored crayons, using the brightest color, — blue for the coast, green for the mountains, red for the boundaries, etc. Then moisten the blackboard with a wet cloth, and press the crayoned map upon the moistened surface. Upon removal, a perfectly formed map will be seen, only needing to be lined in to make it stand out more emphatically. The transfer map thus prepared can be used over and over again by occasional renewals of the crayon. Stencil maps have their outlines perforated with small holes, through which the crayon dust readily passes to the board when the map is held against the blackboard and struck with the dusty eraser or cloth. The faint lines thus made are strengthened by the crayon. Stencil maps save so much time, they have become very popular. Such a map can be easily made by the teacher, or "stencil" maps all ready for use can be purchased of the educational publisher.

The Standard Letter and Invoice File, sold at most stationers' for fifty cents, is a great convenience for a scrap or picture album in geography. The various pockets are arranged alphabetically, and will hold a large amount of material. A moulding-board of some kind is one of the necessities of the schoolroom, but it is not at all necessary that it should be a grand twenty-five-dollar zinc affair. A very good board can be made for a few dollars by any carpenter. A convenient size is two and one-half feet by three feet: if it has round edges, two inches deep, and is set on folding supports so as to be raised and supported at a convenient angle, its usefulness is greatly increased. But any teacher can easily obtain a plain pine board, such as is sold for kitchen use, paint it blue, and make it serve all needed purposes. On such a board, sand, clay, and putty work can be made.

Thompson's electric stereopticon and his reflectoscope are most convenient and helpful apparati. The reflectoscope projects photographs, drawings, maps, objects in their true form and color if they are not over five inches square. A. T. Thompson & Co., 1 Madison Square, New York.

The School Stereoscope and the stereographs made and published by Underwood & Underwood, New York, present the view or the object in natural perspective as if seen from a window. As each child needs an instrument and a picture the cost for class work is large, but the results very satisfactory.

Dissected maps help to give variety to recitations.

Home-made charts perhaps are capable of as varied use as any kind of apparatus. The best charts are printed upon white cloth, but these cost too much. Manilla paper,

however, makes a good substitute for cloth, and when bought by the pound (ten to twelve cents per pound) is much cheaper. It is usually sold at this price by the roll of about one hundred pounds. Several teachers can club together, and buy a roll. The best instrument with which to write upon this paper is the rubber pen recently manufactured for marking and directing goods. This pen is usually sold at rubber stores and stationers; price, fifteen cents.[1] To make it work well without dipping too often, the side creases should be enlarged by cutting out with a penknife, so they will hold more ink. Dip and write as with an ordinary pen: there is no danger of blotting. A vast amount of writing can be done with a single pen.

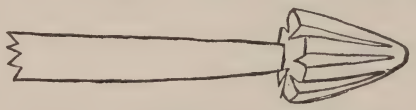


Fig. 5. — Rubber Pen, Natural Size.

These charts are readily mounted by carrying the top of the paper over a half-inch stick, and fastening with large-headed tacks; then carry bottom of paper twice round one-inch pine-roller, and fasten with common tacks driven about two inches apart. One or two eyelets in the top stick will hold the chart. If a similar eyelet is fastened into the picture-moulding in front of the class, and a linen string or cord run through it, the teacher will have a convenient method of raising and lowering pictures, charts, or maps, whenever needed for instruction. These charts should not be more than ten or twelve feet long. The wider kinds of paper are the more convenient. Most of these charts should be on paper four and a half feet wide.

[1] Sold by J. L. Hammett, 250 Devonshire Street, Boston.

A convenient form and size for a chart is one made and mounted like a music chart, in which the leaves are three feet square.

Below, suggestions are made of good subjects for chart work : —

Population of China compared with other countries, shown in squares and color ; climate of North America by belts ; the religions of Africa ; the discoveries of Africa ; review charts ; spelling-charts ; a temperance chart, showing to the eye by rectangles the amount in value of liquor, bread, cloth, etc., consumed in United States in a year ; comparative height of mountains ; length of rivers ; Greeley's Arctic route ; the world's industries, shown by blocks ; all the grand divisions on the same scale.

Valuable charts can be easily made by cutting out from some family atlas the richly colored diagrams to illustrate population, area, exports, imports, etc., and mounting the same on stiff paper, with margins wide enough for writing figures or a few words sufficiently large to be read across the schoolroom.

More useful than these are the original charts which evolve themselves from the common experiences of the schoolroom. For instance, you are teaching about the discoverers of Africa. You sketch on the board the routes of each discoverer, and write near them the proper date and name. Now, if these be drawn in colored inks on a large piece of manilla paper, the chart thus made can be used year after year, and much time saved for other work.

Our first large charts were stencilled letter by letter on white cloth. Such charts can be read in the largest hall ; but they are not needed in the schoolroom, and they cost

too much time and money. With the aid of the rubber pen, charts can be easily written or printed so as to be read by every pupil in the ordinary schoolroom.

Perhaps the best is left for the last. It remains to speak now of a piece of apparatus which puts all those given above completely in the shade. It is well known, of course, that the most perfect pictures for the schoolroom are photographic slides, thrown upon the screen by an

oxyhydrogen lantern or solar camera. These pictures can be enlarged in the schoolroom to ten feet square. A picture of that size impresses itself upon the young mind. As these pictures can be seen by all the scholars at the same time, explanations and comments are profitably given by the teacher. The first cost of the stereopticon or lantern (from one hundred dollars to two hundred and seventy-five dollars) is so great, and there is so much trouble and

expense in supplying gases, that it is practically ruled out of the public schoolroom. A worthy substitute is supplied by the Solar Camera,[1] such as is shown on p. 90, the invention of Professor Henry R. Russell, Millville, Penn.

We speak from personal acquaintance, as we carried the first instrument to Boston, shortly after its invention, and have yearly shown our classes nearly four hundred different pictures with this instrument. The results have exceeded our fondest hopes. The convenience and ease with which the camera can be placed in the window, the screen adjusted, the room darkened, and the necessary preparations made for a picture-lesson, are greatly in its favor. Excellent pictures can be shown, even when the day is hazy. Under ordinary sunlight the pictures are better than by the artificial light. At the same time the room is light enough for the pupils to take notes. This instrument can be used in teaching geography, history, physiology, natural sciences, etc. Its availability is unlimited. Having once enjoyed its fascinating help, we should not know how to teach in the future without its assistance. As it costs less than ten dollars, the teachers of any school-building or district, by combining, can readily purchase it. Slides can now be purchased of A. T. Thompson & Co., 13 Tremont Row, Boston, Wm. H. Rau, 1324 Chestnut Street, Philadelphia, the Detroit Photographic Company, and usually wherever photographs are sold.

NOTE. — The simple outline of a country cut out of tough, flexible pasteboard, about six inches by four, is a cheap and useful help for beginners in map-drawing. The pasteboard outline is placed on the slate or paper, and the children easily mark around it the required contour. Such outlines are now made and sold by J. M. Hammett, 250 Devonshire Street, Boston. Price, $3.00 per hundred.

[1] For a full account of this instrument, see "This Continent of Ours," Appendix.

Jones' Model of the Earth is a raised globe twenty inches in diameter. It shows the earth in spherical form and in relief, without water, the continental shelf and its slope, the elevation of plateaus and mountain ranges, and the depths of the oceans. This most useful globe is sold for sixty dollars, by A. H. Andrews Co., 300 Wabash Ave., Chicago, Ill.

The Gardner Season Apparatus is a great help in teaching Change of Seasons, as it shows clearly the rotation and revolution of the earth, varying lengths of day and night, the reason for the location of the tropics and polar circles, etc.

The apparatus for Dr. Wilson's "Geography Visualized by the Stereograph." The stereographs are for sale by the H. C. White Co., 45 West 34th Street, New York City.

CHAPTER VI

MAP LANGUAGE

WITHOUT maps, true geographical teaching is impossible. — *Guyot.*

BOOKS FOR CONSULTATION

Crocker's Methods of Teaching Geography.
Geikie's Teaching of Geography
Goodison's Articles in Popular Educator for 1887 and 1888.
K. Johnston's Historical, Physical, and Descriptive Geography.

CHAPTER VI

MAP LANGUAGE

RELATIVE POSITION — ABSOLUTE TERMS — PLAN AND MAP — A MAP VS. A PICTURE — WHAT MAPS SHOULD SHOW — MAP-READING — THE MAP OF AFRICA — ILLUSTRATIVE LESSON

IF the pupils do not fully understand the symbols used on an ordinary map, they must be taught this new language. In a class of beginners, this is a somewhat difficult task, and requires weeks for its accomplishment.

FOR BEGINNERS

1. Teach first Relative Position.

Meaning of the prepositions, *up*, *above*, *below*, etc. Illustrate with book and desk.

Right and left hand, right-hand corner, etc.

2. Absolute Terms, North, South, East, etc.

Show compass.

Direction of other rooms, both relative and absolute. Other schools and houses.

3. Draw Plan and Map.

Teacher places on each desk different objects, such as a book, slip of paper, round pasteboard disk, etc., and has the class draw on paper a representation of the desk thus arranged.

Then a plan of the room can be made, drawn to scale,

as one foot to one-fourth of an inch; and this may be followed by one of the house, and finally the yard may be included. In doing this, the teacher must exercise good judgment, and not require too difficult work for the age of the children.

Then the vicinity can be mapped out in a simple way.

When this is finished, a map of the city, or a more elaborate one by the teacher, will be examined by the class with much interest.

At this stage, it is well for the teacher to draw a simple plan of the surroundings of the school, on a cloth blackboard, as it lies on the table, and then hang it up so all can see it at once. This will suggest why maps are always hung against the wall.

The difference between plans and maps may now be illustrated by making a simple plan and a simple map of the same well-known part of the town. Distances can be quite correctly measured on maps if drawn to a scale.

The difference between a map and a picture is shown by illustrations of the same section of the country represented in the two ways. Most of the English geographical readers contain such illustrations in the first numbers. It is well to make a profile of the same country.

A map is not a picture, but it should suggest a picture.

The picture is more beautiful to the traveller, but the map more useful. Why?

WHAT DO MAPS SHOW?

To *beginners*, the ordinary map should show the shape of the country; the coast-line, the locality of capes, islands, mountains, and highlands; in what direction they extend;

the mountain peaks; where rivers will be found; localities of lakes, gulfs, bays, cities, towns, and harbors. The raised map will show clearly the highlands and lowlands, the valleys, the peaks and volcanoes, the plains, and many physical features.

If the older pupil is furnished with raised maps, or even physical maps as good as King's, he can learn to see represented, besides locality, on such maps, the general configuration, and find the form most easily suggested, the position and then the proportion of highlands and lowlands, the plateau regions, the prevailing directions of the long ranges, the slope of the land, the water-shed, the groups of rivers or river-systems, where probably navigable, deltas, and other kinds of mouths, comparisons of rivers widely separated; the pupil can also find the latitude and zones; from the latter, the position of the elevations, etc., he can determine the climate, and then the vegetation and animals. All this will help him to decide the occupations of the people, and industries of the different parts of the country.

If the teacher prepare a set of maps of all the grand divisions, drawn on the same scale, made either upon one large chart, or cut out separately in pasteboard, he can readily show by such maps the comparative size of the different countries. See Fig. 57, Chap. XIII.

MAP-READING.

Very few teachers in this country base their instruction upon an intelligent use of the map. The pupils should be taught to read the map as one does a newspaper. A large part of the facts given in most so-called descriptive parts of geographical text-books are clearly stated upon the map,

and do not need further expression. The pupil can be easily led to discover the important physical features of each country for himself. This will compel him to think while studying the map, and lead to self-activity and independence of research. At first the teacher must assist the pupil both to see and to express these geographical facts. Suppose it is a class of the fifth year study, and map-reading has never been taken up as a special study; then the teacher might lead them to see and talk in some such way as the following: —

Hang up before the class any large physical map, and a political map, and a map of the world. Let the pupils open their geographies to such maps as are found therein on the country. Suppose the grand division is

AFRICA

Teacher. Look at the map of the world, class, and tell me where Africa is situated.

Pupil. Africa is in the southern part of the Eastern Hemisphere, directly south of the Mediterranean Sea, and between the Indian and Atlantic Oceans.

T. What important lines do you notice crossing it?

P. The equator and tropics.

T. What facts are suggested by these lines?

P. They include a large part of the land in the country within the tropics, — more than is found in any other country. Hence Africa must be very hot and moist.

T. Moist?

P. Yes, it ought to be very moist: but I see on the political map that the northern part contains a great desert; this must be owing to local causes.

T. You are right. We will learn about this at another time. Draw three lines, so as to include the contour, and tell me its shape.

P. It is triangular, like North and South America.

T. Look on the chart of comparative sizes, and tell me how it compares with other countries in reference to size.

P. It is larger than North America, and two-thirds the size of Asia.

T. What is the meaning of the colors on this physical map?

P. The green indicates lowlands, less than one thousand feet high; the buff, plateau regions; the white, very high mountains, usually covered with snow.

T. When you examine a map like this, what do you learn?

P. As the green is only on the edge, I learn that the lowlands in Africa are mainly around the edge, near the coast, while the interior is a vast plateau.

T. What exceptions to this general rule?

P. There is some low land around Lake Tchad and the banks of the Nile.

T. Is the white color used?

P. Yes, in Abyssinia and south of that country. This must be the highest land in the country.

T. Look at the physical map of Europe, and note any difference from Africa in the situation of the highlands and lowlands.

P. In Europe, the highlands are at one side, in the south-eastern part of the country, and the lowlands are in the north-eastern part. The latter cover more than half of the country.

T. On the outline map draw a straight line from the Bight of Biafra to the middle of the Red Sea. Into what does this line divide Africa?

P. Into two parts of about equal size.

T. Are the two parts alike?

P. No: the northern part is rectangular in shape, and the southern part is triangular.

T. What other differences appear upon a close examination of the map?

P. In the northern part I see that the chains run parallel with the parallels, or nearly east and west, as in Europe and Asia; in the southern, they run north and south. As there is more white and less green in the southern part, I judge the land is higher in the southern part, and hence that the plateau slopes towards the north.

T. You are, in the main, right. The average height of the plateau in the northern part is fifteen hundred feet, and in the southern part three thousand feet. Where are the highest peaks?

P. Just south of the equator, in the main axis.

T. What do you notice on the map about the ranges of mountains in the south?

P. They come together in Cape Colony, hence that country must be very mountainous.

T. Notice the low land in that vicinity.

P. It is not so wide as in other parts of the coast; for a considerable distance it disappears altogether, and there the mountains must come down to the water's edge, as in the south-western part of South America.

T. What else can you conclude?

P. That the slope is very abrupt.

T. Do the mountains of Africa separate any countries?

P. Yes: the Kong and Crystal Mountains separate Guinea from Soudan and Central Africa.

T. But far more interesting than this is the separation by the Atlas Mountains of the northern part of the Barbary States from the southern or desert part. North of the mountains are found moisture, temperate breezes, vegetation in abundance, a desirable and healthy climate; south of the mountains, just the opposite. Where is the highest range of mountains?

P. On the east, near the Indian Ocean.

T. Where do you find the highest range of mountains in Asia?

P. On the south side, near the Indian Ocean.

T. Where in North and South America?

P. On the west, nearest the Pacific.

T. The largest mountains, remember, are nearest the larger ocean; the largest slopes, nearest the smaller ocean. In what direction does water always flow?

P. Down hill. The long rivers will flow down the long slopes.

T. Into what oceans, then, must the large rivers flow?

P. Into the Atlantic, because most of the land slopes toward the Atlantic, or its counterpart the Arctic; then, again, these rivers rise on the opposite side of the countries, between which ocean and high mountain barrier there is always abundance of rain.

T. If a system of rivers consists of several flowing into the same body of water, find some systems in Africa.

P. I find on the map the Atlantic system, Mediterranean, and Indian systems.

T. What plainly indicates the slopes on the political map?

P. The general direction of the rivers.

T. Then trace with the pointer on this political map the continental water-shed.

P. Beginning at Cape Blanco, the continental water-shed runs toward Lake Tchad, then northeasterly to Lake Tanganyika; passing round the eastern side of Lake Bemba, it moves westward toward the Crystal Mountains, and then turns in a south-eastern direction to the Kalahari Desert.

T. In the southern part of Africa, is the distance from the water-shed to the coast very long?

P. No.

T. Then how can there be any long rivers?

P. Only by great curves, as in the case of the Congo and Niger.

T. In what part of Africa is there a long distance from the water-line to the coast?

P. From where it crosses the equator to the Isthmus of Suez.

T. What do we find here?

P. The longest river in Africa, flowing almost directly north, called the Nile.

T. What is noticeable about the northern part of Africa?

P. The general absence of rivers; hence, deserts. The Nile cuts the great desert into two parts, but it has no branches.

T. Why not?

P. Because a desert is on each side.

T. What river of Africa is most readily navigated, and why?

P. The Nile, because it flows over a gentle slope which is not crossed by mountains.

T. What is true, as seen on the map, about the other rivers?

P. They descend from elevated plateaus, and make their way through ranges of mountains toward the sea. It is probable that they are not navigable, like the Nile, from the ocean, for there must be cascades not far from their mouths.

T. Such is the fact. The Congo, for instance, is navigable from the Atlantic Ocean for one hundred and ten miles to Vivi. For the next fifty miles it is not navigable, owing to cascades. Between the parallel ranges of the Crystal Mountains it is navigable for eighty-eight miles, and then cascades interrupt navigation for eighty-five miles. In order to overcome these difficulties to commerce, a railroad is needed, two hundred miles long, through Guinea. How have these facts affected the history of the country?

P. I suppose these mountains and non-commercial rivers have kept Africa closed to civilization, except about the Nile.

CHAPTER VII

MAPS

In learning outlines, use drawing; in studying relief, or surface slope, use modelling. — *Alex. E. Frye.*

BOOKS AND MAPS FOR REFERENCE

Apgar's Map Drawing.
Appalachia, June, 1882.
Admiralty and Pilot Charts.
Bangs's Outlines of Map Drawing.
Davis and King's Use of Government Maps.
Freeman's Historical Geography of Europe.
Frye's Geography, with Sand Modelling.
Guide Books, especially Baedeker's.
King's and Redway's Advanced Geographies.
Huxley's Physiography.
Johnston's Maps and Atlases, London; especially such as those on Physiography.
Lett's Popular Atlases, London.
Parker's How to teach Geography.
Powell's Maps of the U. S. Geological Survey.
Reports of Chief of Engineers on River and Harbor Improvements.
Royal Geographical Society's Maps in "Proceedings."
Reclus's The Earth.
Stanford's Maps, London.
Swinstead's How to draw a Map from Memory.
U. S. Coast and Geodetic Surveys.
Wheeler's Surveys West of the 100th Meridian.
Wilme's Plain and Ornamental Mapping.
Wenz's Atlas zur Landkarten-Entwurfs Lehre.

CHAPTER VII.

MAPS

OBJECT OF A MAP — USE OF THE GLOBE — RAISED MAPS — PUTTY MAPS — PHYSICAL MAPS — HOW BEST REPRESENTED — WALL MAPS — MAP-DRAWING — TRIANGULATION OF NORTH AMERICA — PROGRESSIVE MAPS — OUTLINE MAPS — ADVANTAGES IN USING THEM — LARGE MAPS

Object of Maps.

A MAP is a representation on a *flat* surface of a part of the *curved* surface of the earth. The map of the world is usually drawn on Mercator's projection, and other maps on Bonne's, or the conic projection.

(Teachers should explain how the former distorts the northern countries. See Grove's Geography, p. 25, or Huxley's Physiography, p. 335.)

The map shows locality; i.e., the direction and the distance. The *scale* on a map shows the ratio of the distance on the map to the distance on the earth. Maps should be frequently spread on the floor or on the top of a table, with the top of the map towards the north, because children get wrong ideas of up, down, etc., from the hanging wall-map.

The use in the class-room of a map made by a skilful cartographer is one thing; the making by a pupil of a poor or even good imitation of the above map is quite a different thing. The printed map is properly used to help locate places, and to tell direction and distance. The map made by the pupil is to help him fix in mind various facts; in other words, simply ***to aid his memory.***

As the maps in ordinary geographies are not at all accurate, as they are good for nothing to a sea-captain or in accurate surveys, and as no two of them exactly agree, it is foolish to require, as in some schools, that the pupils attempt to draw the coast-line exactly as it is in the geography. We know a certain school in which the children have been obliged to commit to memory all the little details of the coast-line, and reproduce them. It was heart-rending to look at the perfection of map-work in this grammar school, and to think what it must have cost; and then to think, after all, it was not correct, for the geography maps in text-books are on too small a scale to be accurate. The maps of the *Coast Survey* are generally on a scale of one inch to a mile; the map of North America in most text-books is one inch to five hundred and twenty miles.

Maps should not be considered works of art, or their production lessons in drawing. They should not be surrounded by numerous water-lines and beautiful borders; but they should be neat, in good proportion, and crowded with facts.

Maps ought not to be used to the exclusion of the use of the globe.

As a very good and serviceable globe can now be bought for twenty-five cents, teachers and school authorities are inexcusable if they do not possess a supply.[1]

Raised Maps.

These maps are sometimes called *relief maps*, although the latter term should be employed for maps which show by shaded lines the elevations. Raised maps show the

[1] Some teachers encourage their pupils to purchase these cheap globes. We have known three-fourths of a class to possess them. Paper globes, six inches in diameter, price twenty-five cents, are made by Robert Gair, 163 Chambers St., New York.

elevations both by color and by raising up the part representing the highland and plateau regions.

The best maps[1] of this kind manufactured for sale are found in the Royal Relief Atlas, published by Messrs. Sonnenschein & Allen, London; price, ten dollars. There are thirty-one raised maps in this book, and children never tire looking at them. With this atlas as a guide, raised maps can be easily made on the moulding-board, either by using moulders' sand or clay, or by the use of dry scouring beach-

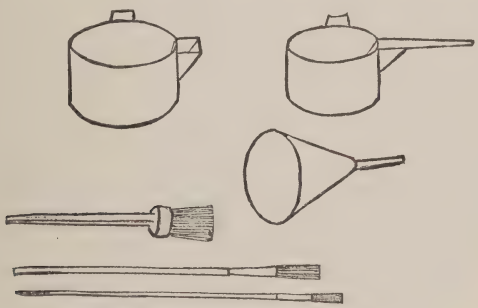


Fig. 6.—Dishes and Paint Brushes
Used in making Sand Maps.

sand. In using either, it is customary to make the outline first on the board in crayon. But it is better to make the outline with finger or stick after the sand has been spread over the board.

The dry sand is preferred by some to moulders' sand, because it is so clean, needs no water, and can be so readily manipulated. It cannot be elevated at an angle, — to some a serious objection, to others an advantage.

In working dry sand, it is never touched with the hands directly, but sifted through a small kitchen sieve, poured

[1] J. L. Hammett, 250 Devonshire Street, Boston, Mass., sells a set of excellent raised maps, six for $3.00.

through a tunnel with a small nozzle, or brushed with painters' paint-brushes (see Fig. 6) as follows: —

A thin layer of sand is sifted over the space to be used.

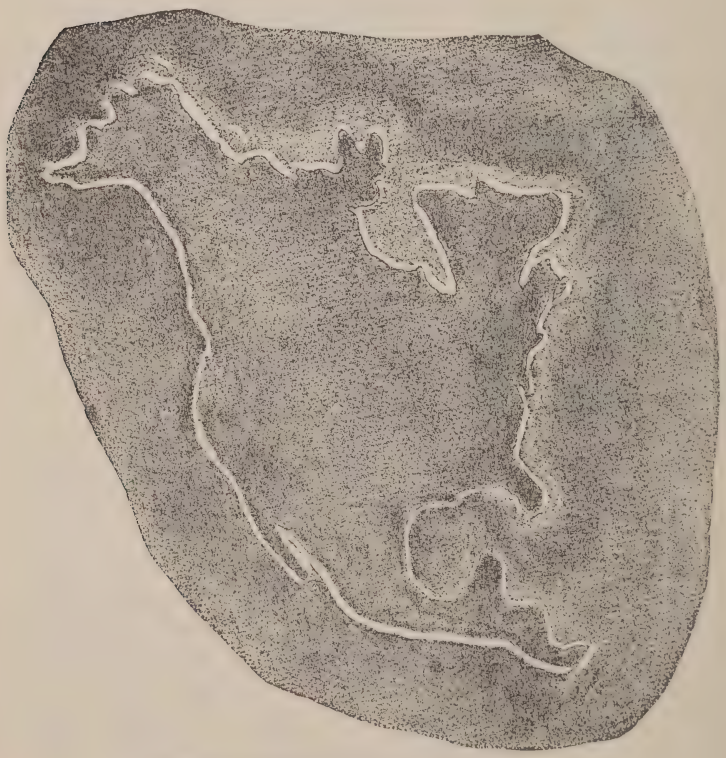


Fig. 7.—Sand Map. Outline indicated. (1)

the outline marked with a sharp stick, and the coast-line indicated by brushing away the sand with the smallest brush where it is necessary (see Figs. 7, 8); then a greater thick-

ness is sifted on the part where the plateaus and highland districts are situated (see Fig. 8).

The principal mountain chains are now thrown up by pouring the sand on through the tunnel; then the rivers are indicated by the use of a common awl or sharp stick, and

Fig. 8.—The Sand nearly Brushed Away
around the Coast and Highlands indicated. (2)

minor elevations between different rivers brought out by pouring or sifting the sand (see Fig. 9). After one or two maps have been made, the pupil ten or twelve years old will quickly make a fine sand map.

But the teacher needs a large-sized raised map, such as

can be seen across the ordinary schoolroom. Mr. Dean, principal of a grammar school in Hyde Park, Mass., has for several years taught his classes to make such maps out of a *composition* which readily hardens. The pupils in his graduating class make maps of the different countries, about two

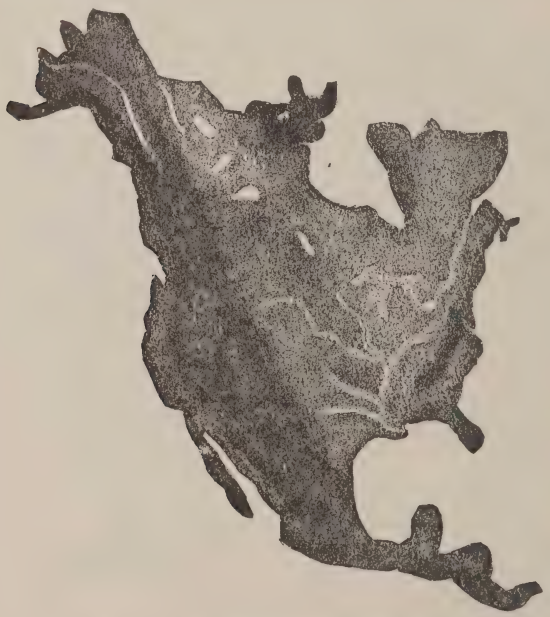


Fig. 9.—The Rivers and Great Lakes
marked out with Awl, and Elevations more accurately defined. (3)

feet by three feet. The class as a whole makes one large map each year, some eight feet by ten, which is given to the school.

Raised maps have been made in this country of plaster-Paris, and in Germany of rubber.

After some experiment we have come to the conclusion that there is nothing superior to common putty for these large raised maps; for the substance is easily obtained, costs about five cents per pound, and only two pounds are needed for a very large map, and, unlike the composition, it does not harden for several days, so that changes and corrections can easily be made, — a matter of considerable importance, — and the map can be built up step by step.

Directions for Making a Large Putty Map.

1. Make, or have made, of half-inch board, a wooden moulding-board, two feet by three feet. Paint it on both sides a light blue, two coats.

2. When dry, mark out with colored crayon or pencil the coast-line of the continent to be made.

3. Then spread over the surface of the grand division a thin layer of putty, using the hands, putty-knife, and a small roller. Cut out the coast-line distinctly.

4. The next day, additional putty can be added to indicate the elevations, table-lands, etc. The long strips of putty are put on to mark out the different prominent chains of mountains, and a cone of putty half an inch high placed in its proper position to illustrate the highest mountain. The mountains can be made rough with a sharp pin.

5. Now mark the courses of the rivers from mountain source to mouth with an awl, and fill the little channel with tinsel-thread such as ladies use for ornamental work. The lakes and inland seas can be covered with tin-foil. When the putty finally hardens, these will be held in place. Different colored putties may be used to represent elevations, as on King's physical maps. Red putty is considered a good color when only one color is used.

If the putty is in proper condition for setting a pane of glass, it can be easily manipulated for the raised map: it does not crumble nor crack, and does not need to be painted. We have a full set of these maps made by a pupil fourteen years of age. They have proved to be most valuable for teaching elevation and drainage. Each set cost about $1.25.

The pupils may be encouraged to make small putty maps after the sand map has been introduced. They will enjoy the experiment, and some with a little help will succeed remarkably well.

Raised globes are used to considerable extent in Germany, but they are at present too costly to be used in this country. Such raised globes could be easily and cheaply made by putting putty on a paper globe.

Physical Maps.

In some books, "relief" maps are produced by shading, in the place of color. The best relief maps, or "relief views," in modern geographies are those in Swinton's Grammar School Geography. These plates have been photographed, and made into very effective slides for the solar camera, by Professor C. F. Adams, Superintendent of Schools, Spencer, Mass.

Physical maps can be represented in three ways: by color, by shading, by lines. The first has been largely employed in the ordinary geography. Excellent maps of this kind are those made by Professor Guyot, and once published by Ivison, Blakeman, & Co. Several geographies contain similar physical maps. No geography ought to be used as a text-book which does not give the child some representation

of highlands and lowlands. The simplest method of all upon a flat surface is by color. Pupils from ten to twelve can easily draw physical maps, and properly color them. Use for colored crayons those called "Patent Creta Polycolor," and sold for twenty cents a box, or those put up by the Eagle Pencil Company. After the color has been laid, smooth over with a quill or toothpick.

When the system of shading is made in a more careful manner, so as to show the general features of the ground on an extremely small scale, hachures are employed. If the ground is steep, the lines or hachures are drawn near together, so the hills and mountains on the map become dark; if the ground is less hilly, the lines are farther apart; and where it is level, the lines are thinner, and the appearance of the map is lighter. In military maps, a definite scale of shading is used. Hachures are used in the Eclectic series of geographies, and in Baedeker's guide-books. In Barnes's old geography, the relief is given in a very striking way by woodcuts which give panoramic views of a whole grand division from ocean to ocean.

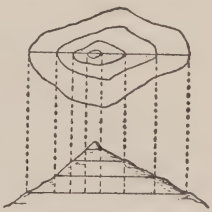


Fig. 10.—Contour Lines round a Hill.

But the third system is the most accurate of all, and is rapidly coming into use. Instead of hill-shading, a number of curved lines are traced over the country, as in the map on p. 273. These curves are called contour-lines. Each curve represents the same height, and the distance from one curve to another always represents one hundred feet or one thousand feet, according to the scale. (See Fig. 10.)

The best political maps contain clear outlines, moderate

colors, variety of type, railroads in red, and the canals shown by proper lines; also head of navigation, population of important towns, ocean-currents, steamship routes, etc., such as are given in Barnes' and King's geographies.

Hughes' and "the Peerless" political wall-maps are very good. Much more can be taught by the use of maps than has ever yet been dreamed of. There should be maps to show the trunk railroads, the lines of foreign commerce, the leading productions, manufactures, comparative population, etc., for the world, as the latest census reports usually show most effectively.

Map-Drawing.

This department of geography is frequently a source of much vexation among teachers. On no subject pertaining to this study is there a wider difference of opinion. The opinions now held by the author on this subject are very different from those believed and practised a few years ago. His present conclusions have been reached after much thought and experiment.

Map-drawing is a means rather than an end. Its great object is to help the pupil fix in his memory the geographical facts taught. Through the map the pupil should see, as through a lens, the beautiful world beyond. Maps, then, should be made for use, rather than for beauty. The mechanical parts should be done in as easy and as rapid a manner as possible, that more time may be given for the educational part.

If the outlines are to be drawn, then some simple system of diagram is desirable as helpful in securing, with the least possible delay, a reasonable accuracy.

Different Methods.

(*a*) Diagram of *squares* and *rectangles*.

This method is very common, but not on that account the best. After examining several of these plans, we believe the system invented and published by F. E. Bangs, when in a Grammar School, New Haven, Conn., is the best of the kind.

(*b*) Instead of artificial squares and rectangles, some teachers use the parallels and meridians. It is claimed for this system, that the pupils learn these lines, and have them in memory when needed. This system has been used by many teachers in various parts of the country, and very fine maps are made by its use.

The *objections* to the above methods are, that a square or rectangle is not a natural guide to the drawing of a crooked line, hence many oblique lines have to be drawn in order to place the coast-line in its proper position. If both squares and oblique lines are drawn, the system is too complicated, and map-drawing becomes a burden instead of a pleasure. In drawing South America by one plan of rectangles, one hundred and seventy words are to be memorized, and nearly thirty unconnected facts. The same objection can be brought against the use of parallels and meridians; viz., too many lines must be learned which are of no future value.

(*c*) By triangulation.

The simplest and easiest method of drawing correct outlines thus far examined is Apgar's System of Triangulation. There is less here to commit to memory than in other systems. Instead of a hundred and seventy words, as

in one method, to describe the drawing of South America, only eighty are necessary, or less than one-half. All the memorizing is very easy, because one line usually suggests another. Every line used has some relation to the first line.

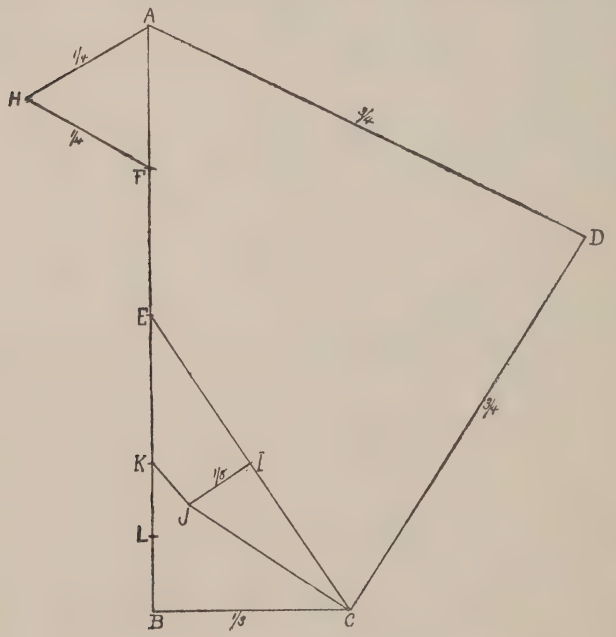


Fig. 11.—Diagram for North America.

But even this method may be made oppressive to the children if the teacher undertakes to teach the triangulation by itself as a memory exercise. It should be taught first with the outline of the grand division as we show above in the original diagram for North America on a similar plan.

Triangulation for North America.

Let the children draw these lines on their maps in light pencil-marks; the teacher should draw with the children, on the blackboard outline map.

Teacher. Draw a straight line from Point Barrow, in the northwestern part of North America, to Point Conception; prolong this line till it is met at right angles by a line running westward from New Guatemala, Central America. The perpendicular call A B (see Fig. 11); the base, C B. Divide A B into four equal parts, and bisect the lower fourth. What point on the map is equally distant from A and C?

Class. Strait of Belle Isle.

T. Then connect Belle Isle and Point Barrow and New Guatemala. Find what proportion A D. is of A B.

C. Three-fourths of A B.

T. What point west of A F is equally distant from Point Barrow and Sitka?

C. Uninak Island.

T. Connect them and find the relation of lines.

C. Any side of this equilateral triangle is one-fourth of A B.

T. Connect New Guatemala with the centre of A B. Bisect this line, and draw a line from centre to St. Lazaro Point. What is the relation of this short line?

C. One-eighth of A B.

T. Draw J C. and J K. What relation is C B to A B?

C. Three-eighths of A B.

In this process the pupils have thought out, in the most easy and natural way, the relations and directions of the lines, and they will not readily forget them. Let them next draw the triangulation by itself, and when completed they should study some of the points of coincidence such as will

readily occur to pupils and teachers. After a sufficient number have been noted, the class is ready to draw the contour.

Progressive Maps.

By a progressive map we mean one which is made by the pupil, a part at a time, as the study of the country proceeds. Such a map grows from day to day, and the making of it is a never-failing delight to the child. Let us suppose the country is North America.

1. The class first draw the triangulation as previously indicated. (See Fig. 11, p. 116.)

2. Then the outline is drawn, after this subject has been carefully considered by teacher and class. (See Fig. 12.) The general shape of the country and its characteristic features, as indicated by its shores, are now clearly impressed upon the child.

3. After the elevations have been considered, the class take the next step, and draw the mountain ranges. (See Fig. 13.)

4. Then the rivers are drawn, and their names printed, after the drainage has been considered. (See Fig. 14.)

5. Then the most important of the natural divisions are printed, the capitals and important seaports located.

6. Finally the productions are printed in red ink, the animals in some other color, the imports are indicated at one side, the directions of currents are shown, etc.

The map finally will look like the one in Fig. 15, which was photographed from a map drawn in the Lewis School, Boston, by Master Townsend. (See also Figs. 4 and 17.)

Fig. 12.—Progressive Map. (1)

Outline Drawn or lined in from the printed form.

Fig. 13.—Progressive Map. (2)

The Mountains are now indicated.

Fig 14.—Progressive Map. (3)

The Drainage is now drawn.

Fig. 15.—Progressive Map. (4)

The Important Places, Productions, Animals, etc., are located.

Printed Progressive Outline Maps.

Remembering the statement made in a former part of this chapter, that the great object of the map drawn by the pupil is to help him retain the facts of geography, it is necessary to distinguish between the important and the non-important facts to be remembered, that plenty of time may be given to the one and not wasted on the other.

Those schools which have practised any system of map-drawing are certainly far in advance of those which draw no maps at all; but the question now arises, Can a farther step be taken by having a part of the map drawn by the printing-press or by some mechanical means by which it will be done quickly and accurately?

Many teachers have found great difficulty in teaching the various methods of drawing the outlines of maps, on account of the intricate construction-lines required; and some have given up in disgust all systems, and fallen back on sketching entirely from memory. To make a good outline of even the simplest grand division, by any method, requires the memorizing of an immense amount of detail. We were convinced several years ago that to require in the lower classes of a grammar school the reproduction from memory of quite perfect maps, such as were shown the writer recently from a certain school in Boston, was an act of unnecessary cruelty to children. For several years we have urged the teachers of lower classes to use pasteboard[1] outlines, by means of which the pupils trace the outline on slate or paper. This method has now become quite universal for pupils who have studied geography one or two years. In visiting Mr. James M. Sawin's school in Providence a few

[1] These pasteboard outlines are now for sale by J. L. Hammett, Boston. Price, $3.00 a hundred.

years ago, we found that he was making outlines for all the grades of his school by the use of the cyclostyle. He considered them as useful in the upper classes as the lower. After using such outlines with two different graduating classes, and watching the effect, we are convinced that it is better to furnish the outlines than to require the pupils to memorize them, for the following reasons : —

1. The furnished outlines avoid the task of memorizing the contour of a country, while the *act of tracing* affords ample opportunity for acquiring a definite knowledge of its shape, its windings, indentations, and projections.

2. They save a large amount of time, which time can be given to the more important study of the interior, — the surface, climate, productions, and their relation to commerce ; the growth of cities and towns, and causes of the increase of population, etc.

3. They avoid the memorizing of the more or less intricate construction-lines adopted in other systems.

4. They keep a *correct form* of the country under consideration *constantly before the pupil.* This advantage is obvious.

5. They favor economy of energy and patience.

6. They are generally useful. (*a*) These maps may be used to indicate, besides the usual facts placed on maps, the locations of areas of mineral deposits, of forest growth, of prairies, deserts, plateaus, of the various kinds of soil, of staple products, of dense population, of manufacturing districts, etc.

(*b*) For developing the features of continents, made specially prominent in physical geography.

(*c*) In connection with the study of ancient history.

(*d*) In modern history, the maps of North America and the United States may be used for indicating the early discoveries, the settlements and the general development of the

Fig. 16.—Heath's Progressive Outline Map of North America.
As given to the pupil. (1)

continent, the colonies, and the nation, in connection with the text-book study of these features. No time can be spared, in history, for *practice* in map-drawing.

(*e*) For rapid and thorough tests of pupils' knowledge of

political, descriptive, and physical geography, and of many facts in history, no series of questions and answers can equal in three hours what may be ascertained, practically, of their

Fig. 17.—Heath's Progressive Outline Map
after the pupil has drawn and filled in the map. (Photographed.) (2)

knowledge of these subjects by these outlines in thirty minutes. Such a map can be easily and rapidly inspected by the examiner.

7. They are pleasing to the pupil. He takes to them at

once; while the memorizing of the construction-lines of some methods proves a fatiguing burden, and often dulls his interest.[1]

Large Maps.

In studying geography or history, large outline maps are a prime necessity. These can be made on the board by the help of stencil outlines, or by transfer maps. (See Chap. V., p. 86).

We once enlarged a map in this way: A photographic map of the United States, called "a slide," was placed in the solar camera, and the outline the needed size was thrown on a large sheet of manilla paper, and marked in with pencil. In this manner we obtained a very perfect map, the coast-line, rivers, lakes, etc., being as perfect as in the original engraved map from which the photograph had been taken.[2]

[1] But not all teachers have time to make their own outline maps. This want has been largely supplied by Messrs. Heath & Co., who have just published a set of progressive outline maps of the different grand divisions and the world on Mercator's projection. These maps are printed in light ink, on good drawing-paper, ten inches by twelve inches in size, being about the same as the pages of most of the common-school geographies. The outline without too much detail, some of the adjoining islands, a part of the adjacent grand division, a few of the principal circles, a lake or two, are the features indicated. Space is left for the pupil to fill in the mountains, rivers important political divisions, and print the names of cities, natural divisions, productions, etc., as the study progresses. At the close of the study, such outlines form one of the most convenient ways of testing the knowledge of pupils who may be required to reproduce the first-mentioned map from memory.

[2] An excellent large outline map of the United States, edited by Professors Channing and Hart, Harvard College, useful for all kinds of class instruction, is also published and sold for sixty cents, mailed, by Heath & Co., Boston.

CHAPTER VIII

PICTURES AND OBJECTS

VISUAL images, or pictures of objects, constitute the staple of our ordinary recallings. — *Sully*.

BOOKS FOR CONSULTATION

[The list of books pertaining to this chapter will be found on p. 136.]

CHAPTER VIII

PICTURES AND OBJECTS

SIGHT — PICTURES AND OBJECTS — ORBIS PICTUS — ILLUSTRATED BOOKS — IMPROVEMENT IN PICTURES — ADVANTAGES OF PICTURES — SOURCES OF PICTURES — LIST OF ILLUSTRATED WORKS — OBJECTS — CABINETS — LOAN EXHIBITION — LIST OF ARTICLES — HOW TO GATHER A COLLECTION — TROPICAL VEGETATION

IT is generally agreed among psychologists that sight takes the lead as the channel of perception. Spencer says, "The child's restless observation, instead of being ignored or checked, should be diligently ministered to, and made as accurate as possible." Sully further asserts: "Whatever tends, like a picture or object, to excite a pleasurable state of mind in the child at the time of learning, will arouse the attention and deepen the impression made upon the mind, and consequently the ability to recall the matter which has been thus presented." Dr. Galton, in his recent book on Human Faculty, instances that eighty-eight English persons out of one hundred who were tested remembered the scene at the breakfast-table by mental imagery. In a similar test made with our present class of boys, all but one could recall a vivid picture of the breakfast-table. When we pronounced the name *Colorado River*, nearly all reported that they formed a picture of a river flowing between lofty walls of stone, such as they had previously seen shown to them by Adams's solar camera. Three-fourths of the class recalled the history lesson by seeing the picture of the printed page

We once placed in the hands of a child, two and a half years old, Prang's natural-history books, containing those richly colored pictures of birds and animals, and also a set of paper animals. In a very short time this little specimen learned the names of thirty different animals, which she would repeat with the greatest glee. She had learned these names without the slightest effort. Seeing, learning, enjoying, were identical to her young mind.

There are two practical ways of conveying knowledge to children in the schoolroom through the sense of sight, — one by means of pictures, and one by means of objects. The latter is far more instructive, the former more convenient and more widely applicable. The small plant, the piece of wood, the insect, the fruit, and the specimen of stone can be used conveniently as objects; but not the big tree of California, the Rocky Mountain peak, the Yosemite Valley, the elephant, or the Brooklyn Bridge. The teacher, then, should use objects as far as practicable, and supply the deficiency with pictures.

The universal use of pictures at the present time, in so many departments of education and business, is one weighty proof of their value. But it has not always been so. Two hundred years ago Comenius made the first pictorial text-book, which was called "Orbis Pictus," and which for one hundred years was a favorite with old and young in Europe. The illustrations, however, were very inferior. Years rolled on, but no second Comenius appeared. Art confined itself to Madonnas, instead of trying to help students understand their stupid text-books. A very rare and costly geography, called the "Geographical Grammar," published in 1754, does not contain a single picture, but it has many fine maps

and much red type. Forty years ago pictures began to be used; but what simple works they were, can be learned by examining an edition of Mitchell's Geography, published in 1848. The great contrast between the illustrations now given in text-books, and those employed forty years ago, is vividly shown by the pictures given in Figs. 18 and 19. Even fifteen years ago pictures were quite sparingly used, and the quality was poor. During the last ten years there

Fig. 18. — Preaching to the Indians.
Showing style of wood-engraving used in text-books forty years ago.

has been made, especially in this country, immense progress in the art of wood-engraving. This is shown by comparing the pictures in "Harper's Magazine" of a recent date with a number printed twelve or fifteen years ago. "Harper's," the "Century," and "St. Nicholas," with their monthly instalment of beautiful pictures, have educated the people to appreciate and demand good pictures, and plenty of them. It is certain that pictures are being used to convey information as well as pleasure, more and more every year.

The ordinary illustrations in quality and quantity, such as are found in "Around the World" by Prime, "Compendium of Geography and Travel" by Stanford, "Holland and its People" by De Amicis, and Ober's "Mexico," no longer satisfy the public reader. He begins to call for works of superb and costly illustrations, such as can be found only in "India" by Rousselet, "Nile Sketches" by Werner, "Spain" by Davillion, "South America" by Marcoy, and "Egypt" by Ebers. Photographs are now being used largely for illustrating books. Persons of taste and leisure will find both pleasure and information in examining such costly works as "China" by Thompson, "Thebes" by Abney, the "Royal Photograph Album of India" by Wilson, "Jerusalem" by Tristram, the "Works of France" in five volumes, and many others in the large public libraries. One set of these books would cost

Fig. 19.—A More Modern Picture.
Showing style of wood-engraving at the present day.

a small fortune; but there are books finely illustrated with photographs and chromos, which come within the purchasing power of common people, such as "Bookwalter's "Siberia," Jordan's "Trip to Burmah," Rein's "Japan," Lady Brassey's "Tahiti," the "Indian Alps" by a Lady Pioneer, "Wonders of the Yosemite" by Kneeland, etc.

Most of our text-books now, even the readers and spellers, are handsomely illustrated. Upon some of the new geographies, a wealth of illustration has been lavished, until the pictures have become by far the principal and most important part of the book. Juvenile magazines and books of travel are to-day better illustrated than royal editions were a few years ago. For proof of this statement examine such books as "The Boy Travellers" by Knox, King's "Rambles in Northern Europe," "Little People of Asia" by Miller, Hale's "Family Flight," and "Youth's Companion Series."

Every year lecturers are using pictures and charts more and more to convey information to their listeners. By a series of carefully prepared charts and pictures, President Walker of the School of Technology was able to make the ordinarily dry and uninteresting statistics of a census-report eloquent and impressive.

Business men also have learned the great value of illustration to help in commerce and trade. Chromos, photographs and lithographs are in constant use. The business man always appeals to the eye.

Advantages of Pictures.

1. They *convey correct ideas to children.* Read a description of a place, building, scene, or the face and appearance of a famous man, and then look upon a picture or

photograph of the same, and notice how much better the latter satisfies the demands of the mind. How very little a person would obtain from the excellent descriptions in Thompson's "China," compared with what he would derive from the photographs, if he could use only one method of obtaining the information!

2. *Pictures convey this accurate information very quickly.* There is less need of drill and review.

3. *They create great interest,* as the children have something to look at. They introduce variety.

4. *Attention is easily secured.*

5. *Discipline is greatly lessened.*

6. *Information thus obtained where interest and attention are good, is not easily forgotten.* Once show a class of fifty pupils a picture of some small town, and forty-five or more will be able to tell you something about the place. Tell the same class half a dozen facts about another place of equal importance, and only a few will remember with equal accuracy.

A few teachers, who employ pictures, sometimes make the mistake of showing too many during a term, and, also, of showing too many at one time. This is likely to lead to confusion, and to the feeling that school is nothing more than a picture-gallery, and children were made to be entertained. The teacher must guard against this wrong impression by showing only a few pictures at one time, and these should all bear on one subject. A recitation should follow the exhibit to test the knowledge obtained, and cultivate the power of observation.

Sources of Pictures.

If teachers wish for pictures to illustrate their geography lessons, where can they obtain them? We answer by telling you where we obtained those in our possession. We received the first ones from the pupils. In the younger classes, children will, with a little encouragement from the teacher, bring hundreds of pictures, and gladly give them to the school. A teacher in the Everett School, Boston, has thousands of pictures, which she uses very skilfully in her daily class-work; and a very large part of them have been contributed by her pupils. Teachers and pupils can find quite a supply of serviceable pictures among the numerous advertisements. Western railroads, for several years back, — and recently Eastern railroads, — have published and freely given away valuable maps, and tourists' and excursionists' guides under the pleasant name of "Summer Saunterings." [1] They are generally filled with splendid pictures, and such as would be helpful in the schoolroom. Houghton, Mifflin, & Co. publish and give away an illustrated catalogue of American authors, which is invaluable. John James & Sons issue a little calendar to advertise their needles, which contains a fine picture of Shakspeare's house. A prominent fur-store in Boston once sent out a series of photographs of Harvard University. A friend recently sent us his circular of "Western Investments," and on the front page we found an excellent picture of a Western prairie-home. A firm in Boston has been sending out, to those who forwarded a few postage-stamps, a series of fine chromo-pictures of the different spices. Many advertisements have good pictures of Niagara Falls, the Old Mill, or Washington Monument.

[1] See page 83.

Hundreds of others will come to your hands just as soon as you begin to look and to inquire.

Very valuable pictures are found in the best geographies. If the other parts of the geography are tied with a string before passing, the child will have no temptation to "peep" at pictures not bearing on the subject.

Numerous available pictures may also be obtained from the illustrated papers and magazines. Nearly every issue of the "Century," "Harper's," and "Scribner's" contains good geographical illustrations. Many of the missionary magazines contain helpful pictures.

The World's Work, published by Doubleday, Page & Co., New York, devotes most of its contents to subjects in which everybody is interested, such as "Bermuda," "Rapid Travel," "Leaders of Japan," "Cotton Growers," "Oklahoma," "Japanese Women," "Russia in Turmoil," "China Transformed." All of these articles are beautifully illustrated.

The *National Geographic Magazine*, published by the National Geographic Society, Washington, D.C., has in every number exquisite pictures illustrating living topics like "Cuba," "Animal Wealth," "Panama," "South America."

Pictures of this grade need to be arranged and classified to be of much use. The most economical way to do this is to cut the pictures out, and arrange alphabetically in the Standard Letter-File. Then if you wish to illustrate to the class the habits of the camel, for instance, you take from your picture-album a representation of the above animal, and hang it on the wall of the room, or mount it for the time being in a temporary frame. Some teachers find a panorama, in which all available pictures pertaining to one subject are mounted on long strips of cloth, a very conven-

ient form for review. Others, with a little natural talent for sketching, can readily draw effective pictures for schoolroom use upon the blackboard in colored crayon. If these pictures are sketched upon paper, pasteboard, or cloth, they can be preserved from year to year. Mrs. Blanchard, of the Shurtleff School, South Boston, has prepared for her own use in her room a large number of splendid pictures, drawn upon black cambric with common white or colored crayon. After the crayon has been treated with artist's fixative, it does not rub, and these pictures are easily kept from one season to another.

A step in advance of using the picture is the use of the medallion where it is possible. Mr. Lyford, principal of the Winslow-street Grammar School, Worcester, has created great enthusiasm in his history classes, by showing a set of fine medallions which he made himself, of the great men of the country.

Illustrated Works.

The principal source for pictures is, however, found in illustrated books. In addition to those already given, your attention is called to the following list. First of all we should place in the list the following geographies: —

King's, Frye's, Dodge's, Tarr's, Redway's, and Roddy's, because they all contain so many helpful pictures. We include in the above list not only the advanced geographies but the elementary books. Then come such geographical readers as Carpenter's six volumes, and the Picturesque Geographical Readers, six volumes, published by Lee & Shepard, Boston.

We present below a short list of finely illustrated books, which have been very helpful in the schoolroom in teaching the various countries.

[1] Published by William Ibbister, London.

Nearly all the books are illustrated with woodcuts. A list of very *costly books* is given near the end of chap. xx.

Holland . . . . . JUNGMAN.
Norway . . . . . JUNGMAN.
Russia (2 vols.) . . . . GAUTIER.
On the Balkan Trail . . . MOORE.
The Central Tian-Shan Mountains, MERZBACKER.
Japan in Pictures . . . SLADEN.
High Road of Empire . MURRAY.
The Passing of Korea . HULBERT.
The Yangtze Valley, MRS. BISHOP.
The Heart of Australia . GREGORY.
Voyage of the Vega, NORDENSKJÖLD.
Yachting in the Arctic Seas, LAMONT.
Greenland . . . . . PROF. RINK.
Homes of Americans . . . LAMB.
Northern Pacific Railroad, SMALLEY.
The Great South . . . . . KING.
New Colorado . . . . . HAYES.
Brazil . . . . . SMITH.
Guiana . . . . . THURN.
Land of Bolivar . . . . SPENCE.
Patagonia . . . . . BEERBOHM.
Peru . . . . . SQUIER.
South America . . . . BATES.
Interior of Africa . . . BURCHALL.
Africa . . . . . JONES.
STANLEY'S Congo, and Through the Dark Continent.
African Travel . . . SOUTHWORTH.
Up the Nile . . . MISS EDWARDS.
Egypt . . . . . LORING.
Egypt . . . . . STUART.
Pyramids of Gizeh . . . . VYSE.
Morocco . . . . . DE AMICIS.
Sports of Southern Africa . HARRIS.
China . . . . . COLQUHOUN.
Mongolia . . . . . PREJEVALSKY.
The Middle Kingdom . . WILLIAMS.
Palestine, BURT, TRISTRAM, TILLOTSON.
East of the Jordan . . . MERRILL.
A Civilian's Wife in India . . KING.
Rob Roy on the Jordan MACGREGOR.
England to Delhi . . . MATHESON.
Illustrated India . . . . . STONE.
Gold Fields in India . . JENNINGS.
Japan and the Japanese . HUMBERT.
The Mikado's Empire . . . GRIFFIS.
China and Japan . . . . . OLIVER.
Unexplored Beluchistan . . FLOYER.
The Black Sea, Caucasus, etc., CUNYNGHAME.
In the East . . . . . FIELD.
Babylon and Nineveh . NEWMAN.
Turkestan . . . . . SCHUYLER.
Through Siberia . . . . LANDSELL.
Australia . . . . . POWELL.
Victoria in 1880.
Head Hunters of Borneo . . BOCK.
Fire Fountains . . MISS CUMMINGS.
Coral Lands . . . . . COOPER.
The Far East . . . . . MACLEOD.
New Zealand . . VAN HOCHELETTE.
Tyrol . . . . . WARING.
Etchings on the Loire . . GEORGE.
Normandy . . . . . MACQUOID.
Rivers of France . . . . . TURNER.
The Bride of the Rhine . . WARING.
Berlin . . . . . VIGETILLY.
A Tour in Greece . . . . FARRER.
Picturesque Holland . . HARVARD.
Sketches and Studies in Italy, SYMONDS.
Land of the Midnight Sun, DU CHAILLU.
Voyage in The Sunbeam, MRS. BRASSEY.
Voyage of The Challenger, THOMSON.
Turkey in Europe.
Siberia . . . . . SEEBOHM.
Caspian Region . . . . . MARVIN.
Spanish Vistas . . . . LOTHROP.
Switzerland and the Swiss.
Round the World.
CURTIS, HINGSTON, PRIME, HINCHLIFF, LEYLAND, SIMPSON.
Southern Europe . . . RODWELL.
Recent Polar Voyages.
New Hebrides . . . . MARKHAM.
Nassau and the Bahamas . . IVES.
Between the Amazon and the Andes, MULHALL.
Le Tour du Monde.

Objects or Specimens.

Real objects will be found greater and more impressive than pictures or medallion heads, to illustrate any study. The question will immediately arise, How can poor teachers obtain these things? Do you expect us to purchase them from our small salaries? No, not exactly. We simply ask you to *begin* directly a museum or a cabinet. Locate this collection somewhere in the school-building, in an empty room, unfurnished attic, closet, chest of drawers, cabinet, book-case, drawer; or, if you can do no better, in a neat box on your desk. Put in this collection some few articles to start it, such as specimens of Colorado stones recently advertised by H. H. Tammen & Co. of Denver, Colo., or stones from your own home collection, or some specimens of tropical vegetation.

Having done so much, then fill up your cabinet by persistent begging and borrowing. Educational begging is always honorable. Ask your pupils to bring objects to illustrate geography, history, biography, and other studies, or whatever is curious. You can call it "A Collection of Educational Curios."

At first you may encourage the pupils to enjoy the benefit of such a collection, by suddenly proposing that next Friday will be the great loan day for Europe, or whatever country you happen to be studying. Ask each pupil to bring some little article from home, which came directly or indirectly from across the Atlantic. The results, after the class become interested, will perhaps surprise the faithless. One of the lady teachers in the Lewis Grammar School, Boston, in a class of boys between eleven and thirteen, had, recently,

over two hundred interesting articles, brought in this way as a loan exhibition, to illustrate three different countries. One of the articles was worth three hundred dollars, and another of priceless value because not easily duplicated.

Another teacher in a lower class of girls, tried the same experiment with more gratifying results, having one hundred and twenty-four articles brought in one afternoon to illustrate Europe.

Miss Backup, Dearborn School, Boston, had a class of girls, third year of study in a grammar school, whose parents were not blessed with great riches; yet the members of this class were so enthusiastic about the loan exhibition, that they contributed the following three hundred and seventy-three different articles: —

Cotton, cotton-seed, rice, tobacco, sweet-potatoes, sugar-cane, sugar, molasses, coffee, vanilla, vanilla-bean, cacao-bean, chocolate, lemons, orange-tree, orange, dates, figs, bananas, cloves, nutmegs, ginger-root, ginger, cochineal, indigo, sponge, coral, southern-moss, wheat, flour, corn, rye, oats, barley, hemp, flax-seed, wine, raisins (Cal.), grapes, white wool, black wool, onion, beef, pork, sea-beans, sea-oats, tonga-beans, banana-seeds, resin, turpentine, petroleum, sulphur, salt, rock-salt, coal, furs, gold, silver, copper, lead, zinc, tin, iron, ores containing gold, silver, copper, quicksilver, iron, lead, silver and mica, glass and mica, iron pyrite.

Quartz, mica, lime-rock, garnets, granite, marble, meteor, basalt, coquina, satin spar from Colorado, opal from New Mexico, copper pyrite from Utah, chalcedony from Wyoming, azurite from Utah, orthite from Nevada, malachite from Arizona, agate from Wyoming, jasper from Wyoming, mahogany, rosewood, ebony, oak, maple, red cedar, hickory, sea-horse, skates' teeth, seal's head, walrus's tooth, shark's egg, conch-shell, Indian arrows, buffalo's horns, whale's tooth, vegetable ivory.

Buffalo's hoofs, petrified honeycomb, partridge's tail, deer's foot,

Indian relics, shell from California, 172 stereoscope views, 33 picture-books, 20 pictures.

Clay from Gay Head, stone from the top of Mount Washington, petrified wood from California, stones showing the impression of leaves and shells, California coal cut in the shape of a heart, several wreaths of shell and fish-scale work done by the negroes of the West Indies, tortoise-shell and a turtle-shell, a piece of marble from the Washington Monument, pottery from the West Indies, stones containing garnets, gulf-weed from Gulf Stream, shells from the West Indies, a rock from New Hampshire, asbestos from New Hampshire, doll's hat from Florida, stone from Niagara made by the spray, curiosities from Boston fire, a piece of granite from Grant's tomb, Chinese god from California, a piece of the old elm-tree, petrified fish's eye.

These specimens illustrated North America.

Miss Lynch of the same school, in a small class of girls, met with equal success when her pupils had a *loan collection* on Europe.

A few exhibitions of this character will create great interest in the permanent collection. A little quiet persevering asking, a readiness on the part of the teacher to accept gladly at first *any* specimen brought, to thank the donor, and place his name on the marking-tag, will soon bear fruit. By and by your pupils will in turn become first-class beggars, and then your success is assured.

Several teachers have told us of their successful attempts in this line. Miss Spare of Cambridge, Mass., has several hundred specimens, nearly all given by her pupils, who come from the homes of the ordinary people. The present master of the Comins School, Boston, possesses a very large and well-adapted collection contributed by his second class in about three years. This museum contains many valuable coins and historical relics, as well as specimens to

illustrate geography. Mr. Sears, master of the Franklin School, Boston, and Mr. Huse, Manchester, N.H., have such museums.

Encouraged by the efforts of this gentleman, we began three years ago a collection which has enlarged by a little individual help from teachers, till it has become a real auxiliary in school work. There are now several hundred valuable specimens belonging to the collection; "valuable," we mean, for school purposes. North America, Europe, and Asia are best represented. The quickness with which the children responded to requests for articles astonished us, and encourages us to advise every teacher to start immediately a collection. Pupils, several years after leaving school, have remembered the cabinet, and in their wanderings have tried to supplement deficiencies. One boy, who was a "trial," sent me from California by express a centipede and a "Pacific potato-bug;" another, from South Carolina, a fine specimen of a cotton-plant; a third, from New York, different specimens of wood-pulp.

Finding the children did not bring in specimens of tropical vegetation to the extent desired, we helped them in this direction by purchasing several specimens of tropical flora from Jamaica. The articles thus added, and which have always created more or less interest, consist of sections of exogenous and endogenous woods, sea-bean, coffee, sweet sap; frond, spadix, and shell of the cocoa-nut; bread-fruit (dried), chocolate (both nut and leaf), pineapple fibre, hennequen, bow-string hemp, bamboo, mangrove, lace bark, cinchona bark, cinnamon bark, Brazilian wood, Brazil-nuts, cassava (root and leaf), leaves of common tropical vegetation, and about forty specimens of tropical ferns.

CHAPTER IX

MISCELLANEOUS DEVICES

To interest children we must adopt a better mode of instruction, by which the children are less left to themselves, less thrown upon unwelcome employment of passive listening, but more aroused by questions, and *animated by illustrations.* — *Pestalozzi.*

BOOKS FOR REFERENCE

1,000 Ways of 1,000 Teachers.

Various Geographical Readers.

Such Educational Papers as The American Teacher, Popular Educator, and Teachers' Institute.

Modern Methods in Geography.

Practical Work in Geography, McCormick.

CHAPTER IX

MISCELLANEOUS DEVICES

DIFFERENT SIZES — DIFFERENT SHAPES AND SCALES — SURFACE ZONES — BUSY WORK — SKETCH-MAPS — ODDS AND ENDS — CURRENTS — REVIEW CHARTS — VIEW OF THE MISSISSIPPI VALLEY — PAPERS AND NEWS — PRESENT RULERS — CHARTS FROM CENSUS REPORTS — GEOGRAPHICAL SCRAP-BOOK — SOUBRIQUETS OF STATES — GEOGRAPHICAL COMPOSITIONS — FORESTS AND DESERTS — UPHEAVALS AND DEPRESSIONS — GEOGRAPHY AND DEVOTIONAL EXERCISES

Comparative Sizes.

THE size of the water compared with the continents and islands is easily shown to small children by such a comparison as is represented in Fig. 20. The comparative size of the continents, or grand divisions as they should be called, is forcibly presented to the eye, by a simple drawing such as is given in Fig. 21.

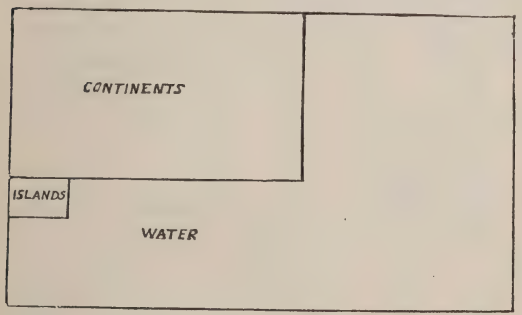


Fig. 20. — Size of all the Continents and Islands Compared with area of the water.

Fig. 21. — Continents Compared with each other in size.

When the Americas are united, they are about the same size as Asia.

Size of Other Countries.

We have very inadequate ideas of the comparative size of other countries. To help correct these wrong impressions, the teacher is advised to enlarge the map of the United States given in Fig. 22, and represent the same on the blackboard, or, better, as a *chart* to be preserved and used year after year.

The author is indebted to Professor Charles F. Adams, Superintendent of Schools in Spencer, Mass., for the idea. By this method, old and young can remember the comparisons.

Further Comparisons in Area.

Children become very much interested in making these comparisons in area. They can usually discover striking similarities for themselves, and delight to represent them on the board for the entertainment of their school friends. The teacher should encourage all this work, as it creates an interest in the subject; and these little map-pictures are never forgotten. Further suggestions in this line of teaching are given in Figs. 23, 24, 25, 26, 27, and 28.

Comparative Size of Mountains.

Draw upon the blackboard a horizontal line. Place at the extreme left a small arc to represent the height of the nearest hill. If this is about five hundred feet, represent its height by half an inch in the curve of the arc. This will make a scale of one inch to every thousand feet. Then represent some well-known mountain in the State, or, perhaps, the highest peak. Let the pupils calculate with you the size of the arc to represent the highest point of land in the

Fig. 22.—Comparative Size of Certain States and Other Countries.

Texas equals in area five Englands or thirty-five Massachusetts; or it equals Borneo, etc. France equals in area the four States, Mississippi, Alabama, Georgia, and Florida. England equals New York

Fig. 23. — Comparative Sizes of Argentine Republic and British India, with Portions of the United States.

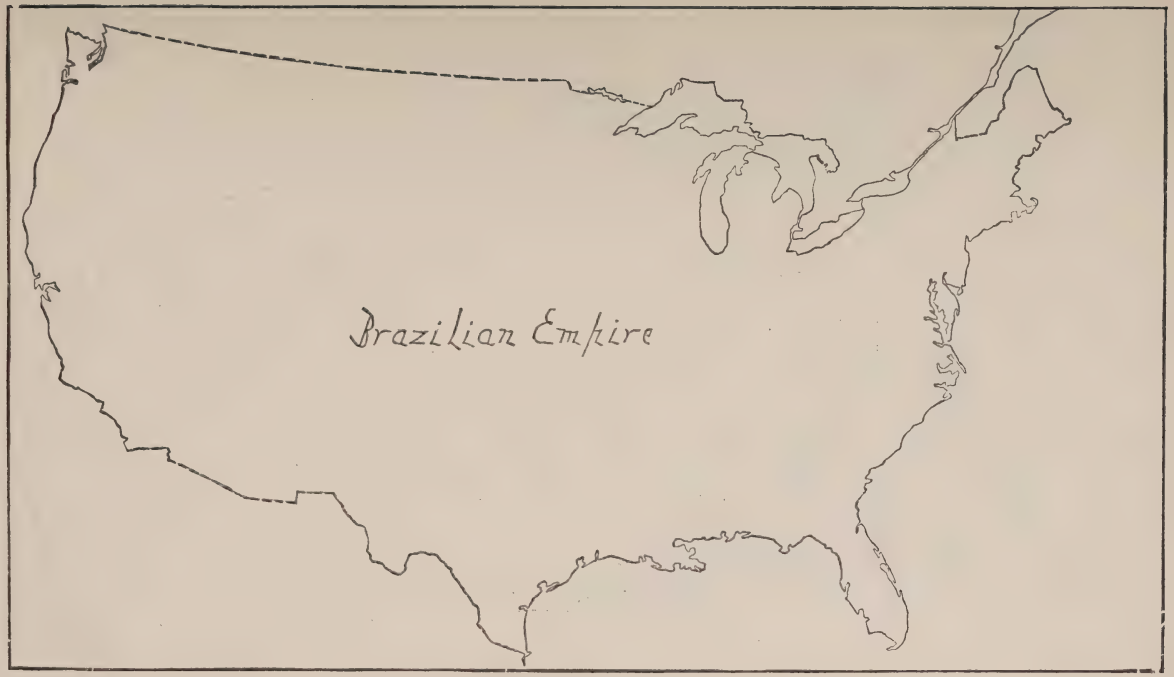


Fig. 24.—Brazil Equals the United States in Area.

Fig. 25.—Showing Size of Alaska and the United States.

BOSTON PUBLIC LIBRARY

Fig. 26.—Showing how far California reaches on the Atlantic Coast.

grand division of North America; then the Andes, finally the Himalayas. Represent the distances in miles, instead of feet, as more easily remembered, and better understood.

Fig. 27.
Showing the number of States equal in area to France or Germany.

Fig. 28.
Showing what States equal in area England, Belgium, etc.

If there is no hill near for comparison, take a tall church-spire or monument. Begin with something the children see.

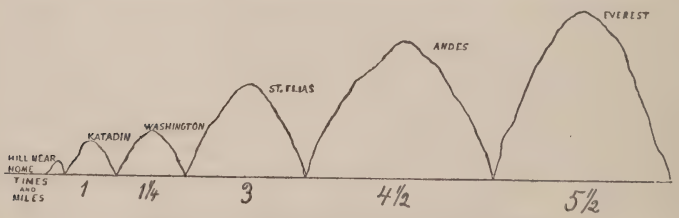


Fig. 29.— Comparative Size of Mountains.
To be enlarged, and drawn on blackboard.

The scale when complete will appear on the blackboard as it does in Fig. 29.

Comparative Sizes of Cities.

Suppose you are teaching in some city like Providence, containing about a hundred thousand inhabitants, and you

wish to convey to the class an adequate idea of the size of some larger cities. Talk to them about the city in which they are now living. Ask them to look up the population of several other places, a list of which you write upon the board, beginning with, —

Providence, about	193,000
New Orleans, about	322,000
Boston (1905), about	593,000
Chicago (1905), about	1,961,000
Paris, about	2,714,000
New York, about	4,014,000
London, about	6,907,000

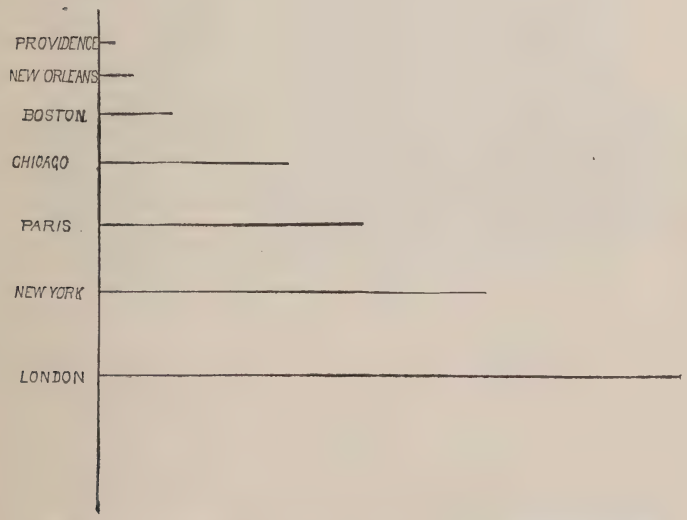


Fig. 30. — Comparative Size in Population of Various Cities.

Ask the class to take large sheets of paper (foolscap), and draw a vertical line at the left over the blue-ruled lines across the width of the paper. Call the width between two

blue-ruled lines equal to four hundred thousand inhabitants. When the scale is complete, it will be in the form shown in Fig. 30.

Comparisons of Population

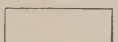
Fig. 31.

London compared in population with New England and New Jersey.

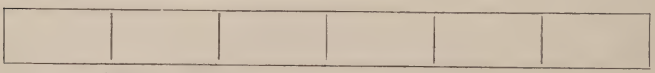
may also be shown to the eye by maps as in Fig. 31, where London and its suburbs are shown to equal in the number of their inhabitants all New England and New Jersey.

Statistics

can be made very attractive to pupils by the aid of diagrams. The annual expenditures of the United States, based on the last census, may be represented by rectangles as follows: —



Unit, $100,000,000.



Tobacco, $600,000,000.

Or it can be made more effective by using the pyramid of blocks, Fig. 32. The children will be interested in learning that for public education the United States spent $85,000,000: for liquor and tobacco the United States spent $1,500,000,000, or $17\frac{1}{2}$ times as much.

Facts given to the Eye by Circles.

A very easy method to help children remember common statistics is to employ the circle so easily drawn upon the

Fig. 32.—Startling Statistics.

Fig. 33.—Annual Products in Manufacturing and Agriculture Compared in Two States.

blackboard by pupil or teacher. The divisions of the circle can be made all the more vivid by using colored crayons. A few facts are thus given in Figs. 33, 34, 35, 36.

Mails.

A report of the foreign mails and trans-Pacific mails, taken from the morning paper, such as is given below, will afford a very interesting review lesson.

Let each child in turn point out on the outline map the route of a letter in going from Boston to Cuba, Mexico, France, the Fiji Islands, China, etc.

Foreign Mails.

☞ For Cuba, by rail to Tampa, Fla., and thence by steamer *via* Key West, Fla., close at this office daily at 3 P.M.

☞ The overland mail for Mexico now closes at the post-office, Boston, at 5.30 P.M. daily, instead of 7.30 P.M.

For St. Pierre and Miquelon, *via* Halifax from Boston, Thursday, March 29, at 6 P.M.

For Scotland direct, specially addressed, only per steamer "Anchoria," from New York, Friday, March 30, at 5 P.M.

For Netherlands *via* Rotterdam, specially addressed, only per steamer "Rotterdam," from New York, Friday, March 30, at 5 P.M.

For France, Belgium, Switzerland, Italy, Spain, and Portugal, *via* Havre, also specially addressed for other European countries, per steamer "La Bretagne" from New York, Friday, March 30, at 5 P.M.

For Central America and South Pacific ports, except Chili, *via* Aspinwall, also specially addressed for Guatemala and Costa Rica, per steamer "City of Para," from New York, Friday, March 30, at 7.30 P.M.

For Brazil, Chili, and the La Plata countries, *via* Rio Janeiro, per steamer "Procida" from Baltimore, Friday, March 30, at 3 P.M.

For Nova Scotia, *via* Yarmouth, per steamer from Boston, Friday, March 30, at 9 A.M.

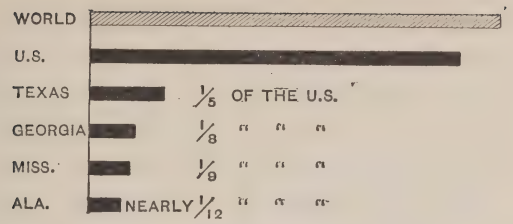


Fig. 34. — Cotton Supply for 1904

Fig. 35. — Comparative Size of the Different Grand Divisions

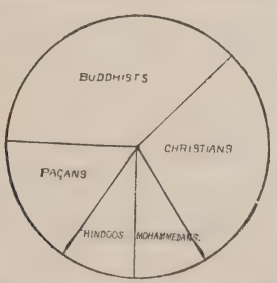


Fig. 36. — Comparative Strength in Number of the Different Creeds of the World.

For Europe, including specially addressed for France, Italy, Switzerland, Spain, and Portugal, *via* Queenstown and Liverpool, per steamer "Umbria" from New York, Friday, March 30, at 5 P.M.

For Curaçoa and Venezuela, per steamer "Caracas," from New York, Friday, March 30, at 7.30 P.M.

For Cuba and Porto Rico, *via* New Orleans, Saturday, March 31, at 3 P.M.

For Halifax N.S., and St. Pierre, Miquelon, *via* Halifax, per steamer from Boston, Saturday, March 31, at 11 A.M.

☞ Date and hour given are those of closing at the post-office, Boston.

Trans-Pacific Mails.

For Australia, Fiji Islands, New Zealand, Samoan, and Sandwich Islands, per steamer "Mariposa," from San Francisco, April 4. Mail will close at Boston post-office Friday, March 30, at 1 P.M.

For China and Japan and the East Indies (except British India), per steamer "Oceanic," from San Francisco. Mail will close at the Boston post-office March 31, at 5.30 P.M.

For British Columbia, *via* Victoria, per ship from San Francisco, about April 6.

For British Columbia, *via* Victoria, per steamer from San Francisco, about April 13.

For Tahiti and Marquesas Islands, per ship from San Francisco, about April 30.

For Society Islands, per ship "City of Papeti," from San Francisco, April 30.

☞ Letters for the Pacific steamers should be deposited in the post-office, Boston, eight or nine days before the sailing of the steamers.

Comparative Shapes.

Beginners in geography will be greatly interested in such comparisons as are given below from *Monteith's Manual of Geography*. See Fig. 37. Let the children discover others, and try to draw them. Some are very easy to find: others are easy to represent.

Fig 37.—Shapes of Countries.

Plant Distribution.

The plants useful to man are distributed in zones, which may be thus represented. (In lower classes, the teacher can give the pupils all the facts, and let them learn them by copying in blank-books, by conversation upon the same, and by bringing specimens of as many as possible, which specimens should be arranged in similar order upon a table, and then the names printed on outline maps.)

Zone.	Latitude.	Characteristic Plants.
Arctic.	66° to 90°	Mosses, lichens, saxifrage.
Subarctic	55° to 60°	Northern grains, berries, pines.
Temperate	45° to 55°	Wheat and northern grains, orchard fruits, maples, oaks, etc.
Warm Temperate .	25° to 45°	Wheat and tropical grains, olive, fig, grape, and citron.
Tropical	0° to 25°	Sugar, rice, maize, spices, and palms.

Maps on Large and Small Scales.

Most maps of a particular section of a country in the common text-book are drawn on a scale of a hundred and fifty miles to an inch; while the grand divisions are usually as small as six hundred miles to the inch, or, as the English always say, 1 : 38,000,000, which means, one inch or one foot on the map represents thirty-eight million inches or feet in distance in the country.

Hence such maps cannot give very many of the details of a country, and pupils are very apt to get wrong impressions.

The difference between the real mouths of the Po, for instance, and the common representation of the same, is brought out by contrast in Fig. 38.

Fig. 38.— The Mouth of the Po
As it is seen on a large map, and as it is represented on most maps in text-books.

Productions in Color.

Pupils like to work in color. This natural liking can be turned to good account by allowing them to represent by a special color each production of the country, or the deserts and the forests. Some pupils will use a dozen colors on the

map of the United States. A key to the map at one side explains the use of the colors. Colored crayon-pencils answer every purpose for this work.

Chart of Comparative Size of Rivers.

In the *People's Family Atlas of the World*, pp. 10 and 11, will be found the comparative length of the important rivers of the world, illustrated, and drawn to scale. Let the teacher begin with some river near home, seen and visited more or less by a majority of the pupils, and draw this river at the left to a certain scale; as, for instance, one inch for every ten miles or for every hundred miles. Then draw other selected rivers in different countries till the longest is sketched.

Chart of Animals arranged according to Climate.

On a large square of manilla-paper four feet square, draw a circle three and a half feet in diameter. Divide the circle into zone-belts. Reproduce the picture on p. 22, *Warren's Primary Geography*, or in the *People's Family Atlas*, by pasting on the manilla-paper animals cut out of paper from the newspapers, or, better, from *Little Folks' Menagerie*, published by McLoughlin Brothers, New York, and sold in all toy-stores for ten cents.

Surface Zones.

Keith Johnston thus contrasts the surface zones of the northern and southern hemispheres. From this can be made a very interesting series of exercises in review.

Northern Hemisphere.	Southern Hemisphere.

(1) The Equatorial Forest Region.

The tropical forests of Central America, of Florida and the West Indies; the "selvas" of the Amazon basin and of Guiana; the forests of Central Africa, of Ceylon, and Southern India, of Farther India, the East India Islands, and of Northern Australia.

(2) The Tropical Pasture Lands.

The "llanos" of the Orinoco in South America, the pasture-lands east and west of Lake Chad in North Africa, and the Ganges basin in India.	The pasture-lands of the Upper Parana and Paraguay river basins in South America, the grassy plains of the Zambesi in Africa, the "Plains of Promise" in North Australia.

(3) The Deserts.

The "great basin" of the Salt Lake in North America and the "American Desert;" the Sahara of North Africa; the deserts of Arabia and Persia; the "Gobi" and the "Thur" deserts in Asia.	The deserts of the "Gran Chaco" and the "Salinas" of the Argentine Republic in South America; the Kalahari Desert in South Africa; and the great interior desert of Australia.

(4) The Temperate Pasture Lands.

The treeless "prairies" of North America, the "steppes" of South Russia and of Central Asia, and the pasture-lands on the borders of Mongolia.	The "pampas" of Patagonia, the Argentine Republic, and Buenos Ayres; the grassy uplands of the north-east of Africa; the "downs" of Australia.

(5) The Temperate Forests.

Forests of British North America, from Alaska to Canada and Labrador; the woods of Sweden, Norway, and Russia; and the forests of Siberia.	The forests of South-western Patagonia and of Tierra del Fuego, of Tasmania and New Zealand.

(6) The Barren Tundra Regions.

The "barren grounds" and "sterile regions" of North America, of Iceland, and the "Tundras" of Siberia.	Kerguelen Island, in the South Indian Ocean, sterile and moss-covered.

(7) The Icy Polar Regions.

The Arctic region.	The Antarctic region.

Rainfall by Contrasts.

High mountain ranges frequently separate moist from dry regions. The facts given below should be explained for each particular region.

Moist. Annual Average.	Range separating.	Dry. Annual Average.
89 inches in Astoria, Ore.	Rocky Mountains.	5 inches, interior basin.
41 inches, Centre Texas.	Rocky Mountains.	8 inches, Centre New Mexico.
82 inches, Norway.	Scandinavian Mountains.	20 inches, Sweden.
144 inches, Guinea.	Kong Mountains.	33 inches, Kuka.
Very moist, Ascencion (74 inches).	Andes Mountains.	Very dry, Atacama.

Busy Work and Reviews.

If the teacher will draw, in white crayon upon the blackboard, several columns, as ruled below, and write the headings in red crayon, and the first column in yellow, leaving

the other columns to be filled in by the pupils, he will furnish a very interesting exercise for geographical busy work.

Lakes.

Name.	Where.	Inlet.	Outlet.
Huron			
George			

Mountain Chains.

Name.	Where.	Direction.	Highest Peak.
Sierra Nevada			

Mountain Peaks and Volcanoes.

Name.	Country.	Range.	Remarks.
Whitney, Mt.			
Everest, Mt.			
Cotopaxi, Vol.			

Sounds, Straits, and Channels.

Name.	Waters connected.		Separates.	
Behring Strait				
English Channel				
Long Island Sound				
Etc.				

Isthmuses.

Name.	What connected.	Waters separated.
Panama Etc.		

Islands.

Name.	Situation.	Surrounded by.	Subject to.
Falkland Etc.			

Rivers.

Name.	Source.	Direction.	Flows into.
Nile Mississippi			

Capes, Promontories, and Peninsulas.

Name.	Where.	Projects into.
Farewell St. Roque North Lower California		

Gulfs, Seas, and Bays.

Name.	Where.	Connected with.	Connected By.
Baffin Bay Mexico Gulf Red Sea			

The distance from Chicago to San Francisco is 2,340 miles. Let the children use this distance on the map of the Old World as one would a pointer on the dial of a large clock. Perhaps they will be surprised to find where the 2,340 mile circle is located.

Ask the children to classify the following plants according to their uses for clothing, food, medicines, fuel, or luxuries: viz., cotton, cinchona, cloves, flax, mustard, maple, oak, poppy, pepper, pine, rice, tea, wheat.

For a home lesson, ask the class to find out plants which grow in warm countries, in hot countries, in cold countries, in temperate countries. Then those which are usually found in dry, moist, or wet climates.

Let the class draw meridians southward from Washington and Boston, also parallels eastward, and notice what countries will be reached.

Let the teacher at noon write on the board the following questions for extra credits: —

Where is the Golden Gate? Golden Horn? Iron Gate?

The Red Sea? Yellow Sea? White Sea? Black Sea? Dead Sea?

Is the Red Sea red? the Black Sea black? the Dead Sea dead?

Find the Blue River; Yellow River; Black River (in one grand division). The Long River; Muddy River; Beautiful River (in another grand division).

What different kinds of workers are rendered necessary in order that a person may ride from Boston to New York? (Engineers, conductors, firemen, brakemen, ticket-agents, machinists, miners, etc.)

Sketch-Maps.

We do not refer now to the common outline map, but to any maps which are sketched in a quick and perhaps unfinished manner, for the purpose of illustrating some point in the reading lesson, some battle-field in the history, or the locality of some event just referred to in the morning paper. We have seen a class aroused from indifference to the keenest interest by the teacher sketching, in half a minute, as

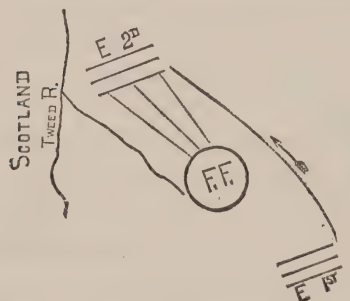


Fig. 39.—Map of Flodden Field.

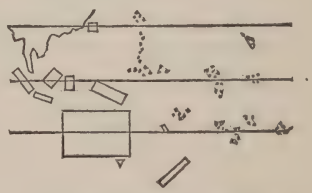


Fig. 40.—Sketch-Map of Oceanica.

rough a representation of the battle of Flodden Field as that given in Fig. 39.

The little map of the battle-ground of Gettsyburg, given in Barnes's History, drawn upon the board on a larger scale, has helped many boys to remember that decisive event.

We remember once seeing excellent sketch-maps of Africa drawn on the blackboard by the pupils of the Worcester Normal School, in one and a half, two, and two and a half minutes. All normal-school students should be trained to do such work in a quick, off-hand manner.

To illustrate still further our meaning, the attention is called to one form of a sketch-map of Oceanica. which any teacher can draw upon the board in three or four minutes.

First, draw three horizontal lines representing the equator and tropics. In the upper left hand corner sketch the south-eastern part of Asia. (See Fig. 40.) Then, to save time, draw the large islands as rectangles, and add a few of the principal groups of islands, all of which are on or near the three horizontal lines. Following the German method, the class can name these islands as rapidly as they are drawn; their names may be written on or near them, towns located, productions and exports printed, etc.

The one chief object of the sketch-map is *to aid the memory*.

Children of other Climes.

A very interesting exercise for young children can be made by a talk upon the child Esquimau, Hottentot, or Indian. Let the children use their imaginations freely; encourage them to ask and answer questions, using ideas already learned. The teacher should make ample use of pictures, specimens, and stories, to make the lesson as real as possible. It is not difficult to get illustrations for this purpose.

Industries of the Mediterranean.

Draw upon the board a large outline map of this sea. Have the children turn to the best map of the Mediterranean to be found in the text-book. Explain to them that a very large fish, called the tunny, in enormous numbers, enters this inland sea from the Atlantic Ocean through the Straits of Gibraltar; in spring passes eastward through the entire length of the sea, makes the tour of the Black Sea,

and returns in autumn to the Atlantic, making a journey of fifty-six hundred miles. Dolphins and other fish prey upon them, but man pursues them with the greatest destruction.

In the bays of Sicily, Sardinia, Naples, and Provence, the blue tunny is enticed into nets, and caught by the million. Where the tunny is caught, is indicated on the map by black lines. (See Fig. 41.) Sardines and anchovies are next in importance.

Fig. 41.—Industries of the Mediterranean.

Coral is found most abundantly in the western portion of the Mediterranean at great depths. The best places for finding it are indicated by a broken line.

Sponges are found in the eastern part of the Mediterranean, at a depth of from twelve to one hundred and fifty feet, on the coasts of Syria and Asia Minor; those of a poorer quality, in the Gulf of Cabes. They are gathered by divers.

The annual production of the fisheries in this sea is said to be £3,000,000; the coral, £640,000; the sponges, £40,000.

Panama Canal.

A very interesting general review exercise for upper classes can be made by writing on the board the names of the ports in the "Panama Canal" selection given below, and the distances given in the first and second column, and ask the class to find the distance saved as given in the third column.

Consider briefly the importance of the canal for the commerce of the world in general. The following table shows, in round numbers, the distance in miles saved between various ports: —

Names of ports.	Distance by Cape Horn.	Dist. by Panama Canal.	Distance saved.
London or Liverpool to San Francisco,	16,900	8,200	8,700
Havre to San Francisco . . .	16,100	7,900	8,200
London to Sydney	16,400	10,900	5,500
Havre to Sydney	16,100	10,600	5,500
Bordeaux or Havre to Valparaiso .	10,900	7,450	3,450
London to Sandwich Islands . .	14,900	7,900	7,000
New York to Valparaiso . . .	10,600	3,900	6,700
New York to Callao	11,200	3,000	8,200
New York to Guayaquil . . .	12,000	2,400	9,600
New York to San Diego . . .	15,400	3,700	11,700
New York to San Francisco . .	15,900	4,200	11,700
New York to Vancouver . . .	16,600	4,600	12,000

Odds and Ends.

In many of the recitations in geography, a pupil or the teacher should be at the *outline map* or *blackboard* a large part of the time. There must be a constant appeal to the eye. The teacher who sits continually, generally has a sluggish class, we have noticed.

Sometimes ask a bright pupil to represent the Mississippi River, or the eastern coast of South America, with a *string* on the desk.

The drawing of all the *States* of this country, or learning their boundaries, is about as profitable a way of spending time as to learn the names of the mountains in the moon.

Geography is one of the best studies for cultivating the IMAGINATION. Teacher and pupils should take imaginary journeys about once a month.

Make in the yard or on the roadside a *rough elevation* out of sand or earth, to represent the surface of the town or city or county; also to represent the natural divisions. One or two children can help profitably in the work, if the teacher has the concept well matured in her mind.

Explain to the children with a globe how a *telegram* dated Boston might be received in San Francisco at an earlier hour than it was sent. Also the advantage the New York and Boston papers have in receiving news over the London papers, as whatever is important in the London dailies can be cabled here, and used in our dailies, without costing our papers much for collecting the news.

Paint upon the floor in beginners' classes the *cardinal points* as determined before the children with the help of a compass.

Representations of valleys, hills, mountains, lakes, rivers, capes, islands, etc., can be easily made upon a board with *coarse sawdust*, putty, dry sand, or moulders' sand.

Friday night, ask the children to learn all they can from father, mother, older brothers or sisters, books or maps, about the *home geography* of the town or city or county.

The next Monday, call upon volunteers to recite what has been learned.

Let the children find from the statistics of population the *number of cities* in the country containing *fifty thousand* or more people, and arrange them in order of size or locality.

Ask the children to open to a map of the United States, and see if the *State of California* would reach from Boston to Charleston.

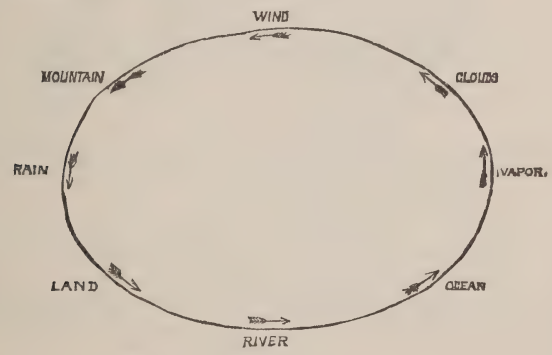


Fig. 42.—From Ocean to Ocean.

Illustration in Physical Geography.

When the teacher is giving a lesson on Rain, to young pupils, it will help them to remember what has been said, if a large oval be drawn on the board, and the important words used be placed at certain points around the oval, as shown in Fig. 42.

Currents.

The action of heat and cold in producing the oceanic currents can be very easily shown to a class with a glass tank three-fourths full of water, if a piece of ice is placed at one end, and the heat of a lamp applied below the tank at the

other end. (See Fig. 43.) If a little sawdust is placed in the water, the currents will soon be seen to move in the direction indicated by the arrows. A long tin dish or a glass sauce-dish will answer all the requirements.

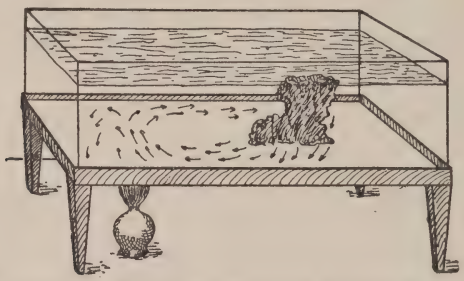


Fig. 43.— Currents Produced by Heat and Cold.

Historical Geography.

1. 1300 B. C. — The world consisted of the Ægean Sea and its border-lands (see Keith Johnston's Geography, p. 21).

2. 300 B. C. — The world has grown bigger; it now embraces the Mediterranean Sea and its border-lands (see Keith Johnston's Geography, p. 23).

3. 800 A. D. — The Indian Ocean may now be added to the Mediterranean Sea, and two centres are made, although discovery had not encircled the Indian Ocean (see K. Johnston's Geography, p. 29).

4. 1500 A. D. — Besides the Mediterranean Sea and Indian Ocean with their borders, the eastern border of the Atlantic is well known (see K. Johnston's Geography, p. 38).

5. 1700 A. D. — Now the known world is found about the Mediterranean Sea, the Indian and Atlantic Oceans with their completed border-lands (see K. Johnston's Geography, p. 56).

6. 1888 A. D. — Now the Pacific Ocean and its border-lands are added to the above, and the known world embraces almost the entire surface of the globe (see K. Johnston's Geography, p. 75. Draw six maps of these six worlds).

It is interesting to remember, that in many respects the known world, No. 1, called the Ægean Sea, was just as

large as No. 6, called the Pacific Ocean: i. e., it took as long to go from one side of it to the other side; it was as dangerous and as difficult to cross.

Representing Elevations.

Elevations may be represented on the blackboard in different colors, or by using a variety of marks as in Fig. 44.

A Review Chart

can be readily made on paper with the rubber pen, or on the board, by copying some such set of topical words and phrases as the following: —

North America. — 1. Position. 2. Manitoba. 3. Charleston. 4. Central Plain. 5. Sponges. 6. Mount Mitchell. 7. Upernavik. 8. Indian. 9. Pineapples. 10. Japan Current. 11. The Grand Cañon. 12. Musk-ox. 13. Grazing region. 14. White-fish. 15. New Orleans. 16. Prairies. 17. Pike's Peak. 18. Central Belt of climate. 19. Mining region. 20. Sugar. 21. City of Elms. 22. Exports of Boston. 23. Saratoga. 24. Scranton. 25. Cotton. 26. Great railroad centre. 27. Sandy Hook. 28. Seal. 29. Denver. 30. Commerce. 31. Characteristics.

Or the longest blackboard in the room, or all the blackboards, may be ruled in a dozen columns as below: —

Position.	Surface.	Drainage.	Political Division.	Natural Division.	Climate.	Human Life.	Productions.	Commerce.	Prominent Cities.	New Facts.	Characteristics.	Comparisons.

Fig. 44.—A Simple Way to represent Elevations.

and some bright pupil be placed at the board to write words descriptive of what simple statement the first pupil gives in reference to position. Two or three pupils may be called in reference to surface. The beauty of this review exercise consists in its snap and rapidity.

View of the Mississippi Valley.

If a person in June were stationed in a fastened balloon over New Orleans, sufficiently high in the air, he would

Fig. 45.—Sketch-Map of the Mississippi Valley.

have a fine panoramic view of the United States. Directly north would stretch out the beautiful Mississippi River and valley, to the great lakes in the distance. [Teacher sketches the same as he describes; or, better, have a pupil sketch at blackboard, and class do the same at their seats.] On each side are many parallel streams constantly pouring their muddy waters into the main and central channel.

To the left of this great valley or plain, rise the sharp peaks of the Rocky Mountains, white with snow, like a silver frame to an oil landscape-painting; to the right are the Appalachian Mountains, rounded and black with forests, near by compact in three parallel ranges, then breaking up into separate groups such as the Adirondacks, Green, and White Mountains. When finished, the sketch will have the appearance indicated in Fig. 45.

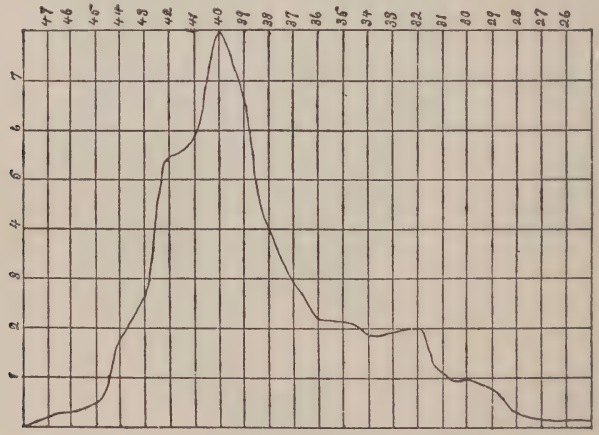


Fig. 46.—From Census Report, 1880.
Showing the number of inhabitants in the United States who live in wet or dry climates

Papers and News.

Bring into the class a number of daily papers, same issue, in which the telegrams of importance have been marked, and pass them out among the pupils in the geography-class, asking them to look up the locality and importance of the places mentioned. A lively exercise will surely follow.

Appoint a committee from the class to report all important news items each Friday; the class to locate on an outline-map the places mentioned.

The Present Rulers of Several Important Countries.

[*Make a review exercise from the list.*]

1910.

COUNTRY.	RULER.
Argentine Republic	President Alcorta.
Austria-Hungary	Emperor Francis Joseph I.
Belgium	King Albert I.
Brazil	President Pecanha.
Chili	President Pedro Montt.
China	Emperor Pu-Yi.
Denmark	King Frederick VIII.
France	President Fallieres.
Germany	Emperor William II.
Great Britain	King George V.
Canada	Premier Sir Wilfred Laurier.
India	Gov.-Gen'l Earl of Minto.
Italy	King Victor Emmanuel III.
Japan	Mikado Mutsu Hito.
Mexico	President Diaz.
Netherlands	Queen Wilhelmina.
Norway	King Haakon VII.
Portugal	King Manuel II.
Roumania	King Charles.
Russia	Emperor Nicholas II.
Spain	King Alfonso XIII.
Sweden	King Gustaf V.
Switzerland	President Comtesse.
Turkey	Sultan Mahomet V.
United States	President Wm. H. Taft.

Charts from Census Reports.

The census report of the United States for 1880 contains many interesting tables in reference to the industries, population, and habits of the people. (See more recent reports.)

To illustrate, we reproduce two tables in reference to the population. In Fig. 46 is shown how the population is

distributed in reference to the annual average rainfall. The figures at the top give the amount in inches; those at the left, the millions of inhabitants. It will be seen at once that eight million people live where the downpour reaches about forty inches on the average for the year. Fig. 47 shows, in a similar way, that much the larger part of the people prefer to live where the average temperature ranges from forty five to fifty degrees above zero.

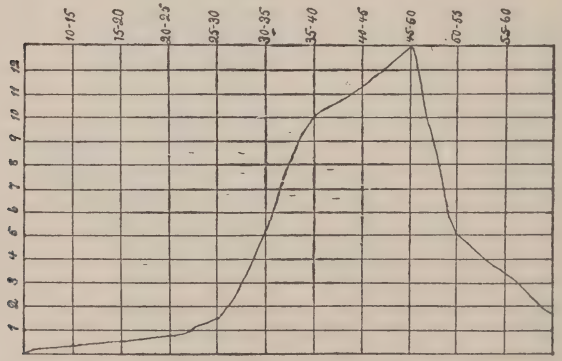


Fig. 47.— From Census Report, 1880.
Showing the number of inhabitants who live in warm or cold temperatures.

The Geographical Scrap Book.

To paste selections in a blank-book, takes considerable time, and prevents using them afterwards individually. It is much better to purchase a standard letter-file (fifty cents), and place the scraps in the pockets alphabetically. With the help of the class a rich collection of material soon accumulates, and no teacher is so poor that he cannot soon own a valuable geographical encyclopædia. To show what is meant, a few selections are given below, taken from our own pocket scrap-book: —

"Flowers are intensely admired by the Japanese; but it is an eye-worship not a nose-worship. At the time of cherry blossoms when the leafless trees are covered with the delicate pink-white petals and the whole air is filled with the subtle perfume, the Japanese turn out in gala costume to enjoy the beauty of the scene. And so through the year."

"In the *Tyrol* they have a pretty custom of taking special notice of grandma's birthday. Young people, of course, expect many happy returns of their natal day; but the old can have only a few more at the best, so the object is to make these few just as sunshiny as possible. In the morning, the Tyrolese children gather in groups under grandma's window, and awaken her with music from flutes and violins. The house is decorated with garlands, and all day long the old lady sits in state in a high chair to receive the simple gifts which are brought her. On each one is pinned some little message of love. A large cake, from which grandma cuts a slice for each new-comer, forms a part of the ceremony."

"*London* is vast, but *Paris* is splendid. London is a city of roads; Paris, a city of streets. London is a growth; Paris is a creation. London is a workingman in his overalls and hob-nailed shoes; Paris is a lady of fashion in silk and jewels. The face of London is an earnest face, with a soul behind it, — a face full of character, intention, resolution. The face of Paris wears the smile of one who drives dull care away; there are wrinkles on it, but they are dexterously disguised with cosmetic arts. The face of London is seamed and scarred, and is not ashamed. London, like its name, is full of a deep reverberation; Paris, like its name, is a flash. Paris is a bunch of summer flowers, with short stems, that must fade and perish to-morrow; London is a basket of autumn-fruits that hold within matter for future ripening and usefulness."

"The *sugar-cane* belongs to the family of grasses, and, when growing, looks not unlike our Indian corn. It is raised from cuttings fifteen or twenty inches long, taken from the top of the plant just below the leaves. The remaining part is then cut off near the root. From the root spring a number of shoots called ratoons. These,

with the cuttings, furnish the plants for the next year's crop. The part between the cuttings and the root is filled with a pith that contains the juice from which sugar is made. The sugar-cane is now cultivated in almost all warm climates; but in Java, Mauritius, and Cuba, the manufacture of sugar reaches its highest degree of perfection, owing, perhaps, to the great extent of the cane-plantations."

"Henry C. Rowe, of Connecticut, has eighteen thousand acres planted to oysters, from which he reaps over a million bushels of oysters in a year. The work is thus carried on by him: —

"The *oyster-farmer*, having secured his ground, next cuts it up into smaller lots, in order to till it systematically. This is done, of course, by buoys in deep water, and by stakes in shallow. Oysters cast their spawn at various times between March and November, but mostly in July and August. Each female contains from ten to sixty million eggs. Few of them, proportionally, mature. The young oysters are for a few days free floaters, and then they are ready to be attached to any clean substance that may offer. The plan has been tried in the vicinity of Groton, in the Pequonnock River, of thrusting down small trees, — white birch being preferred, — letting them lean at an angle of forty-five degrees, sloping with the current. The young oysters set on these very readily. They are harvested when mature by the simple process of pulling up the bushes, and stripping off their singular fruit. As many as one thousand bushels of superior oysters have been gathered from an acre in a single season! Oysters will set on almost any object that they come in contact with. Clean gravel is preferable to any thing else, where it can be had. Old, dry shells are generally used for the purpose."

"In countries where *earthquakes* are common, it is said that animals give warning of the coming danger. Some minutes before the shock is felt, oxen and cows begin to bellow, sheep and goats bleat loudly, and dogs howl. Horses in the stalls leap up and down, trying to break their halters, while those on the road stop suddenly, and snort in a strange way. Rabbits and moles have been seen to leave their holes, and fishes approach the shore. When the great earthquake occurred in the island of Ischia, a few years ago, some people who were asleep were enabled to save their lives by being pulled by their dogs, who barked wildly just before the shock took place."

"*Bamboo.* — Perhaps nothing in the vegetable kingdom is put to such a variety of uses as bamboo. It is said that the Chinese use it in over five hundred different ways, and with them it takes the place of both iron and steel. The farmer builds his houses and fences with it, his furniture is made from it, while the tender shoots furnish a delicious food for his table. The roots are carved into images; the tapering stalks are used for ribs of sails, for every sort of frames, coops, and cages, for handles and ribs of umbrellas and fans; while the leaves are sewed into rain-cloaks and thatches. The shavings are good for stuffing pillows. Chop-sticks for eating, the pipe for smoking, the broom for sweeping, the mattress to lie upon, the book to study from, the skewer to pin the hair, the hat to screen the head, the paper to write on, and the pencil to write with, are a few of the ways in which a Chinaman uses bamboo. With five dollars, he can build quite a decent hut."

"*Chinese Opposites.* — The Chinese mariner's compass points south; i.e., the index is placed on the opposite end of the needle. The Chinese shake their own hands when they meet. The men wear skirts, and the women pants. The men wear their hair as long as it will grow; the women bind theirs up as snug as possible. The dress-makers are men, not women. The spoken language is never written, and the written language is never spoken. In reading a book the Chinaman begins at the end, and reads backwards. All notes in the book appear at the top of the page in place of the bottom, as with us. White is the mourning color, not black. Surnames precede the given names. Vessels are launched sideways, not endways. In mounting a horse, the Chinese do so from the off side. At dinner we commence the meal with soup and fish: they reverse the order, and begin with the dessert. Grown-up men fly kites, and the boys look on. Our bridesmaids are young, and dress in white; theirs are old women clad in black." — *Due West, by* BALLOU.

Fancy Names.

Ask the children to learn all the nicknames for cities they can find; such as Spindle City, Quaker City, Crescent City, City of Churches, City of Elms, etc.

Sobriquets of States.

Make an exercise from the following facts: —

STATES.	SOBRIQUETS.
Maine	Pine-tree State.
New Hampshire	Granite State.
Vermont	Green-mountain State.
Massachusetts	Old Bay State.
Rhode Island	Little Rhody.
Connecticut	Nutmeg State.
New York	Empire State.
New Jersey	Jersey Blue.
Pennsylvania	Keystone State.
Delaware	The Diamond State.
Virginia	Old Dominion.
West Virginia	Pan-handle State.
North Carolina	Tar State.
South Carolina	Palmetto State.
Georgia	Empire State of the South
Florida	Peninsula State.
Mississippi	The Bayou State.
Louisiana	Creole State.
Texas	The Lone Star State.
Arkansas	Bear State.
Tennessee	Big Bend State.
Kentucky	Corn Cracker State.
Ohio	Buckeye State.
Indiana	Hoosier State.
Illinois	Prairie or Sucker State.
Michigan	Wolverine or Lake State.
Wisconsin	Badger State.
Iowa	Hawkeye State.
Minnesota	Gopher State.
Kansas	Garden of the West.
Colorado	Centennial State.
Nevada	Sage Hen State.
California	The Golden State

Sobriquets of Cities.

CITIES.	SOBRIQUETS.
Baltimore	Monumental City.
Boston	Hub of the Universe.
Brussels	Little Paris.
Brooklyn	City of Churches.
Buffalo	Queen City of the Lakes.
Chicago	Garden City.
Cincinnati	Queen City.
Detroit	City of the Straits.
Indianapolis	Railroad City.
Leipsic	Town of the Lime-Trees.
Lowell	City of Spindles.
Nashville	City of Rocks.
New Haven	City of Elms.
New Orleans	Crescent City.
New York	Empire City.
Pittsburg	Smoky City.
Portland, Me.	Forest City.
Rome	Eternal City.
San Francisco	Frisco.
St. Louis	Mound City.
Venice	Queen City of the World.
Washington	City of Magnificent Distances.

Fig. 48. — Important Coal Fields of the United States.

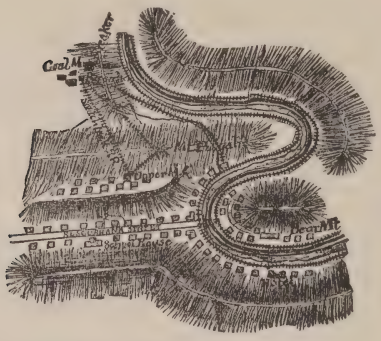


Fig. 49.—Map of Mauch Chunk.

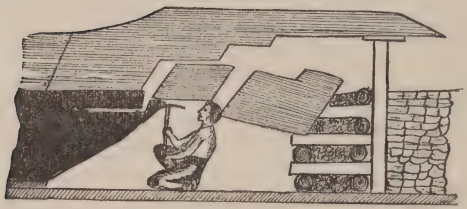


Fig. 50.—A Falling Roof.

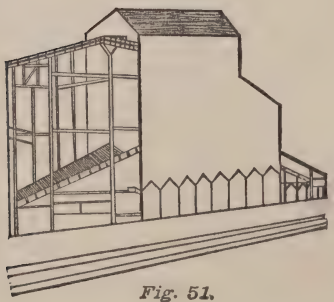


Fig. 51.

Geographical Compositions.

As soon as the class begin to be interested in geography, they are ready to express their new ideas in writing. The best of compositions can be written upon some interesting town, like Washington or Rome; or upon some discoverer, like Stanley or Greely. The common productions, such

Fig. 52.—Pen-Picture of Mauch Chunk.

as cotton, wheat, petroleum, gold, or coal, form capital subjects for compositions. Children are all the more interested if encouraged to illustrate their compositions with pen-and-ink sketches, and make it seem like a book. The writer has in his possession a set of such illustrated compositions prepared by a recent class in his room, on the subject of coal. A few of the pen-and-ink pictures are reproduced in Figs. 48–54.

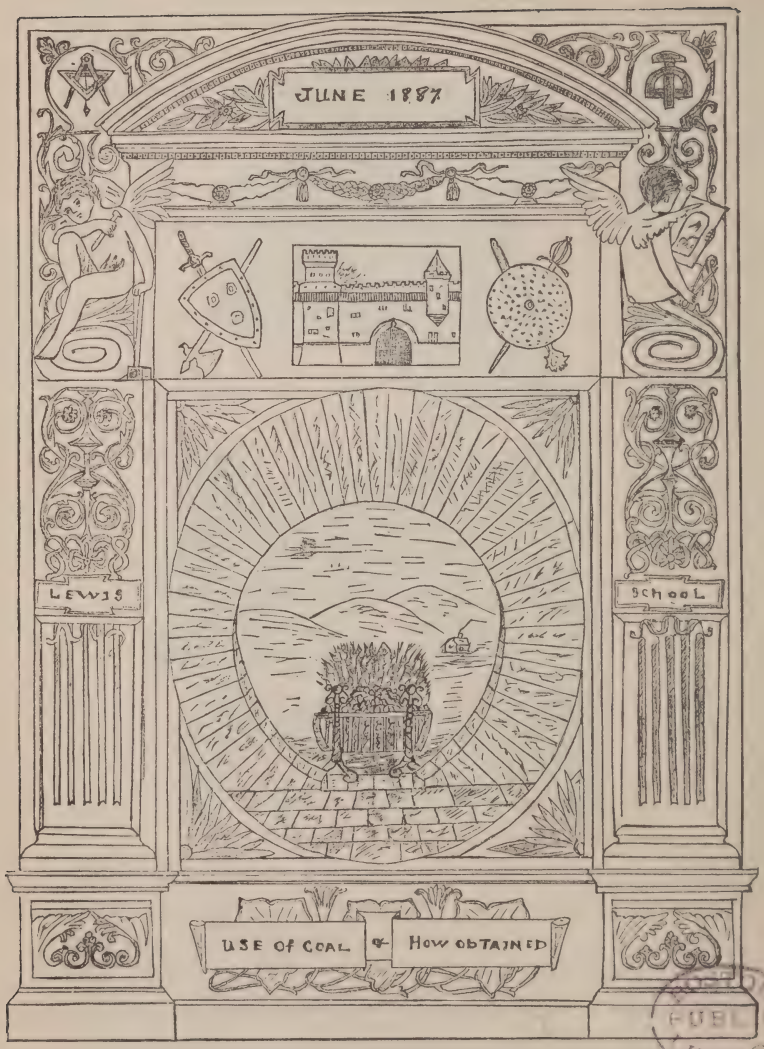


Fig. 53.—Another Title-Page.

(Drawn with pen by Master L. A. Frink, Graduating Class, Lewis School, Boston.)

Such topics as the following are profitable for compositions: —

Fisheries in Massachusetts. Cotton in Mississippi. Rice in South Carolina. Salt in New York. Oysters in Maryland. Silver in Nevada. Coal in Pennsylvania. Railroads in New England; in the West. The Indians; The Esquimaux; The Negroes. New-England Weather. Western Farming. A Letter from California to a Cousin in Maine. A Trip to Alaska. Mining. How Shoes are made. The Life of a Linen Collar. The Seal; Grizzly Bear; Deer. Salmon-Fishing.

A Funny Lesson in Geography.

Children enjoy a bit of fun now and then. They will appreciate the reading of the following from the "Railway Journal:" —

"Dear teacher, will you tell me what the inhabitants of America are called?"

"They are called Americans, my boy."

"And are the people of Mexico called Mexicones?"

"No, my boy; they are called Mexicans."

"Ah! and the people of Greece, for instance, are called Greecycans?"

"No, my boy; they are called Greeks."

"Then, teacher, are the people of Spain called Speaks?"

"No, dear boy; they are called Spaniards."

"Indeed! and the people of Portugal, are they Portugards?"

"No, my boy; they are called Portuguese."

"Ah! then the people of Germany are Germangeese?

"No, my boy; they are Germans."

"Oh! and the people of Norway, are they Normans?"

"No, my boy; they are Norwegians."

"And the people of Sweden, are they Skowhegans?"
"No, dear boy; they are Swedes."
"And are the people of Sardinia Sardines?"
"No, my boy; they are Sardinians."
"And in Japan are they Japanians?"
"No, my boy; they are Japanese."
"And in Morocco, are they Moroccoese?"
"No, my boy; they are Moors."
"And are the people of Patagonia Pats?"
"No, my boy; they are Patagonians."
"And in Hindoostan, are they called Hindoostanians?"
"No, my boy; they are Hindoos."
"And in Holland, are they Holloos?"
"No, my boy; they are Dutch."
"And in Belgium they are Belch?"
"No, dear boy; they are Belgians."
"And in Poland are they Polians?"
"No, dear boy; they are Poles."
"Oh, yes! and in Russia they are Rushes?"
"No, no; they are Russians."
"And in Wales, they are Wallians?"
"No, indeed; they are Welch."
"And in Scotland, they are Sculch?"
"Not at all; they are Scotch."
"And in Ireland, they are Itch?"
"No; they are Irish."
"And in France, they are Fish?"
"No; French."
"Oh! and in England, they are Inch?'
"No; they are English."
"And are the people of Switzerland called Switch?"
"No; they are Swiss."
"Oh, yes! and the people of Sicily are Siss — or are they Sissys?"

"They are Sicilians."

"And in Turkey, are they Turkeyans or Turkeys?"

"Neither; they are Turks."

"Oh! and in Italy, they are Its?"

"No; they are Italians."

"And the people of Denmark, dear teacher — ?"

"My boy, the people of Denmark may go to — Copenhagen. I think we have had all the geography we need for one day."

Geography and Devotional Exercises.

If the teacher make his selections from the Bible, remembering the child nature, his class will be deeply interested; e.g., if Africa is the country they are studying, then begin to read selections in the last part of Genesis and in Exodus about Joseph and Moses. The plagues of Egypt, Exod. vii.–xii., are usually enjoyed by the class. If Asia is the grand division, then selections from the first part of Genesis should be made, about Noah and the ark, Abraham and the three angels, Sodom and Lot, Abraham and Isaac, Isaac's courtship, Esau and Jacob, Jacob serving for Rachel, Jacob meeting Esau. Joshua's adventures as related in the first part of Joshua are always interesting. Samson, Daniel, and Samuel are also great favorites. The girls generally enjoy such characters as Ruth and Esther.

If a map of the world hang behind the desk, the teacher can easily add a word of geographical explanation which will create much interest in the subject. We recently saw a class of rough boys listening with the most intense eagerness for ten minutes as the teacher read, making about ten words of geographical comment, the story of Jacob obtaining the blessing (Gen. xxvii.).

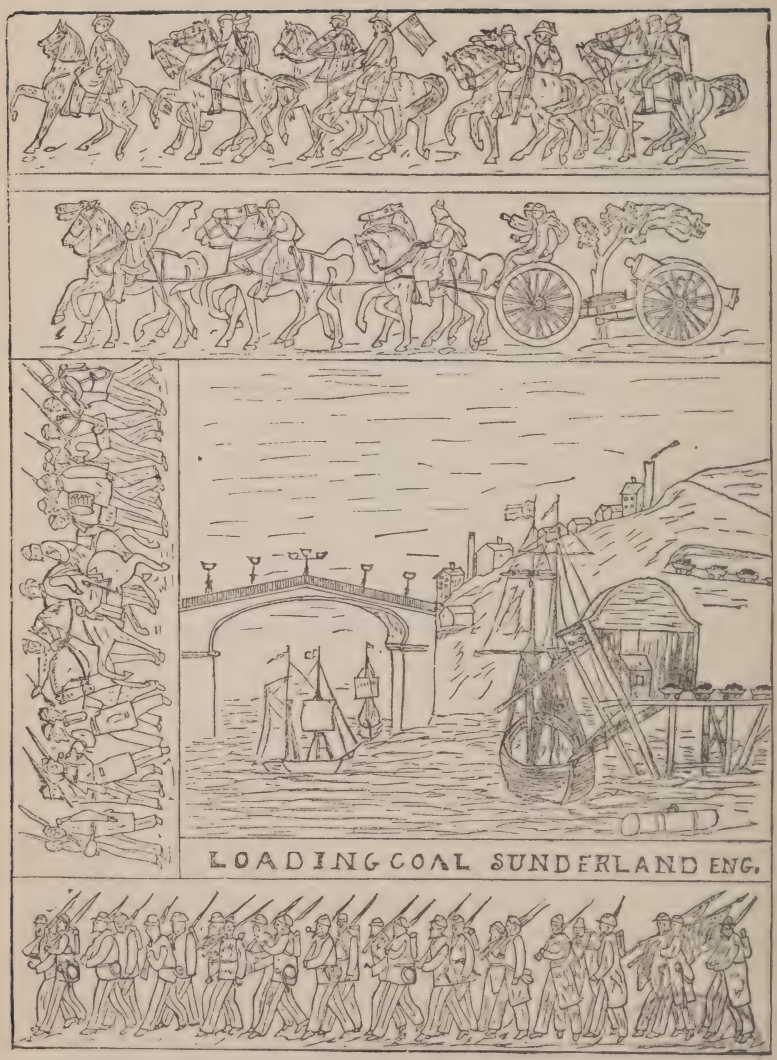


Fig. 54.—Full-Page Illustration from Frink's Composition on Coal.

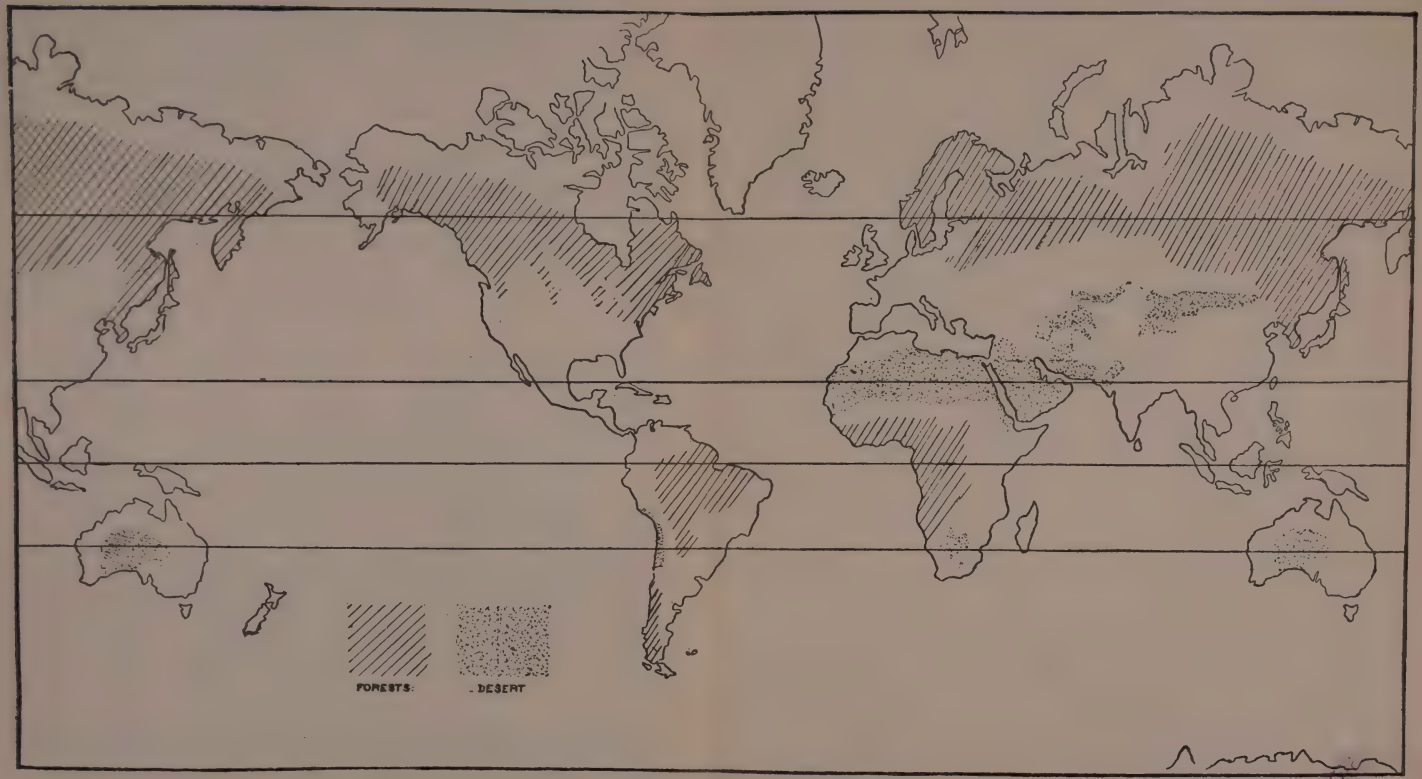


Fig. 55.—Belts of Forests and Deserts.

Fig. 56.—The Upheavals and Depressions in Different Parts of the World.

Forests and Deserts.

A large part of the surface of the earth is covered by one of these contrasted belts, depending upon the amount of moisture. By glancing at Fig. 55, it will be seen at once that the belts of desert plains are on or near the tropics; while the forest belts are mostly on or near the equator and sixty degrees north parallel.

If the teacher is provided with an oil-painted outline map of the world on Mercator's projection, he can readily reproduce Fig. 55 before the class in contrasted colors.

Upheavals and Depressions.

A "bit of geology" always pleases an intelligent class. Many simple facts and good illustrations will be found in such books as Shaler's *First Book in Geology*, and Dana's *Geological Story Briefly Told*. In Fig. 56, the upheavals and depressions so quietly going on about the coast of the Atlantic Ocean, and on the western side of South America, are plainly indicated. If these are shown on the blackboard with colored crayon, and briefly explained by the teacher, the class will be intensely interested, and led to study the matter more fully. (For facts, consult the above books and Reclus' *Earth*.)

CHAPTER X

MODEL LESSONS

THE teacher's part, then, in the process of instruction, is that of a guide, director, or superintendent of the operation by which the pupil teaches himself. — *Payne.*

BOOKS FOR CONSULTATION

FRYE'S GEOGRAPHY, WITH SAND MODELLING.
GEIKIE'S TEACHING OF GEOGRAPHY.
GOODISON'S ARTICLES IN POPULAR EDUCATOR, 1887 AND 1888.
PATRIDGE'S QUINCY METHODS.
PEAVEY'S MANUAL OF GEOGRAPHY.
PRINCE'S METHODS IN GERMAN SCHOOLS.
MCMURRY'S METHOD OF RECITATION.
TROTTER'S LESSONS IN THE NEW GEOGRAPHY.
MCCORMICK'S PRACTICAL WORK IN GEOGRAPHY.

NOTE.— Teachers who wish to study model lessons for lower classes will do well to consult the books mentioned above.

CHAPTER X

MODEL LESSONS

PART I — SURFACE OF NORTH AMERICA

OBJECT OF THE RECITATION — PREPARATION MADE BY PUPIL — PREPARATION MADE BY TEACHER — APPARATUS USED — REVIEW — ROCKY MOUNTAIN HIGHLANDS — ADVANCED LESSON — PLATEAUS — VALLEYS — DIFFERENT MOUNTAINS — VISITING MOUNTAINS — SLOPES

PART II — CLIMATE OF NORTH AMERICA.

OBJECT OF RECITATION, ETC. — BELTS OF CLIMATE — CAUSES AFFECTING THE CLIMATE — FACTS ABOUT THE ARCTIC CLIMATE — CENTRAL BELT — COMPARISONS — FACTS ABOUT THE TEMPERATE CLIMATE — SHORT DESCRIPTIONS

PART I

RECITATION IN GEOGRAPHY, IN A FIFTH-YEAR CLASS

Subject — Surface of North America

Object of the Recitation. — 1. A review of previous lesson. 2. To ascertain how much preparation had been made by the class on the advanced part of the lesson. — Plains and Eastern highlands, which had been assigned as a home lesson. 3. To show, by comparison with what was taught on p. 267, that the recitation is not confined to just what was taught, but it may be somewhat elastic.

Preparation made by Pupils. — Study of notes made at end of previous lesson, when many facts, not in the text-books, were given by teacher. Examination of twenty pictures shown by solar camera, and a few photographs, and several pictures in the ordinary geographies. Reading numerous books from library in preparation for reading hour.

Preparation on the Part of the Teacher. — Studying raised map, Guyot's maps, stereoscope and lantern pictures of the region. The *making* of a sand map the night before. Examination of such illustrated books as "North America" by Manning, "Rocky Mountains" by Miss Bird, "Yosemite" by Kneeland, "United States Geological Survey" by Hayden; *reading* "Great Deserts and Forests of North America," "Rocky Mountains" by Bird, "The Round Trip" by Codman, "From Fifth Avenue to Alaska" by Ed. Pierrepont, "Canada in the Twentieth Century," Bradley. *Consulting* several times "Mission of the North-American People" by Gilpin, "Glimpses of the Earth" by Blakiston, Appleton's Cyclopædia, Lippincott's Gazeteer, maps, etc.

Apparatus Used. — Globe, blackboard, outline map on cloth blackboard, raised atlas, sand map, putty map, charts, Guyot's large wall Physical Map of North America, Hughes' Political Map of same, King's and Dodge's political and physical maps in geographies.

THE RECITATION

(Written from a report made by a pupil. *New matter brought out is printed in Italics.*)

I — REVIEW

Surface in General, and Rocky Mountain Highlands.

Teacher. Miss Foss may point out on the globe the general trend of North America. (She examines, and reports "north and south.")

T. How does North America compare in *size* with the other grand divisions? Hands. (There are forty hands raised, and Master Brooks is selected to answer. He comes forward to the desk, takes up a pasteboard outline of North America, goes to the comparative chart on which all the grand divisions are drawn upon the same scale, and places his outline of North America over several of the other grand divisions so as to answer the question.)

T. Tell the class from the sand map what you learned yesterday about the surface of North America, Miss Hope.

Miss H. The surface of North America is easily divided into two highlands and two plains. Here are represented the

Western Highlands (pointing); here, the Central Plain. The Western Cordilleras are subdivided into the Cascade Range at the north, the largest range, and the Sierra Nevada in California, and the Sierra Madre in Mexico. The plateau is —

T. That will do. Very good. Well, Miss Forbes?

Miss Forbes. I think she made a mistake.

T. What was it?

Miss F. She omitted to say that the Eastern Cordilleras are usually called the Rocky Mountains, and differ from the Western Cordilleras in being higher, and having only one name for their entire length.

T. Very good. *What appropriate name is sometimes given to the Cascade Range north of Vancouver Island?*

(After a pause only one hand is raised.)

T. What is it, Master Pinkham?

P. The Sea Alps.

T. Well done, Pinkham. Where did you learn that?

P. From a book I am reading.

T. Class, please notice the advantage of reading good books. Will the next please describe the *surface* of North America, from Guyot's Physical Map?

(Master Ryan takes the pointer, and repeats what had been given before, only he used the physical map instead of the sand map.)

T. Master Riley, please read from this book, called the "Essentials of Geography," by Fisher, a different name for what Master Ryan called the Cordilleras.

Master Riley reads: In the western part of North America are an inner and an outer mountain system, walling in a vast plateau.

T. Which name do you like better?

R. Cordilleras.

T. Why?

R. Because it is shorter.

T. How many prefer Cordilleras?

(*The class is divided in opinion.*)

T. What does the word Cordilleras mean?

(*No one knew except Miss Hicks, who is a good thinker. She thought it meant mountain, because it was applied to a range of mountains. The teacher then writes the word on the board, using yellow for the first four letters, and white for the others.*) *This is a Spanish word, meaning — Class?* (*and the teacher points to the first four letters, — Cord.*)

T. Or? Hands. Miss Hicks.

Miss H. A cord, or chain, or string.

T. Do we ever use any of those English words for a mountain? Class.

Cl. Yes: chain.

T. So you see the Spanish word means the same as the English word. Mr. Fisher's term is excellent. You can use either.

(This short diversion increased the manifested interest in the class. The eyes began to brighten, and the hands to be raised with greater eagerness to indicate a desire to recite.)

T. Who will describe the Rocky-Mountain Plateau from the sand map?

(About thirty hands are raised. Miss Forbes is selected. She quickly steps to the sand-map, and takes the pointer.)

Miss F. The Rocky-Mountain Plateau lies between the Eastern and Western Cordilleras. A person in travelling over it from north to south would pass various sections of mountains, would go up and down constantly; but he would gradually rise higher and higher above the level of the sea.

The distance from north to south is five thousand miles. This plateau is divided into seven great basins. The most northern one is called the Yukon Basin. The land here [pointing to it] averages about one thousand feet above the level of the sea. The next is the basin of the Frazer River; and very

near this is the much larger Columbia Basin, where the land averages four thousand feet above sea-level. All these basins drain into the Pacific Ocean. The widest and largest of these basins is the next one, called the Interior Basin. The rivers here drain toward the Great Salt Lake, and not into any ocean. This is about six thousand feet high. South of this is the Colorado Basin, containing the Colorado River, the Colorado Cañon, pictures of which we saw yesterday. This slopes toward the Gulf of California. Then comes, east and south of the last-named basin, the basin of the Rio Grande, draining into the Gulf of Mexico. The last and most southern of these basins is that of Mexico. It is also the smallest and highest, being about eight thousand feet above the level of the sea. It is, like Utah, an interior basin.

T. Very good. Now, who will represent all that Miss Forbes has told us so well, upon this cloth blackboard outline? Miss Maloney.

(Miss M. steps to the board; and in a few moments with colored crayon she has drawn the Cordilleras, marked off and numbered the basins, and indicated their elevations.)

T. Any criticisms? Master Riley.

R. She didn't indicate the basin of the MacKenzie.

T. Miss Maloney, did I ask you to indicate that?

Miss M. No, sir.

T. Why not?

Miss M. Because it is not on the Rocky-Mountain Plateau.

(Still Master Riley has his hand up, and also some other pupils.)

T. Master Riley, have you any other criticisms?

R. Yes, sir. She has placed the basin of Mexico too far north.

(Miss M. corrects this mistake to the satisfaction of the now wide-awake class.)

Rocky-Mountain Highlands.

Teacher. Miss Forbes spoke, in her well-given description of the Rocky-Mountain Plateau, in reference to certain pictures of the Colorado Cañon. Tell us about them. (A large number of hands is raised, and Master Vincent is given the floor.)

V. You showed us the other day, with the solar camera, four pictures of the cañon. One was called the Marble Cañon. In this picture the walls of rock rise very steep on each side to the height of four thousand feet, and seem to be composed of different layers of stone, which you said were of various colors. In the foreground we saw a very large Spanish bayonet and different varieties of cactus.

The finest picture of the four is called the Grand Cañon, looking east. Here the river runs a long distance in almost a straight line; and so great are the distances, that the river looks like a silver thread at the bottom of the cañon. Here the walls rise almost perpendicularly seven thousand feet. Many side cañons are noticeable, and places looking like alcoves.

T. What places among the Rocky Mountains are celebrated for scenery? Master Hatch.

H. The Colorado Cañon, Yosemite Valley and Big Trees, and the National Park.

T. Where is the Yosemite Valley? Point it out.

(Master Hatch steps to the cloth blackboard outline, and indicates the position east of San Francisco, in the Sierra Nevada range.)

T. What would you see in this valley, if you visited it?

H. I should see a long, narrow valley, through which a river flows: the sides are very steep, rising in some places perpendicularly to the height of three thousand feet. There are several waterfalls, the largest and most beautiful being the Yosemite Falls.

T. Have you seen pictures of these falls?

H. Yes, sir. There is a photograph of these falls hanging on the wall of the room, near my seat.

T. Tell us about the big trees, Miss Dary.

Miss D. There are two groves of these trees, called the Calaveras Grove and the Mariposa Grove. They are both situated in the Sierra Nevada range, not far from the Yosemite Valley. One grove has over a thousand trees in it. Some of the largest are thirty feet in diameter and over three hundred and fifty feet high. The bark is over a foot in thickness. Bunker-Hill Monument could be placed inside such a tree, and it would reach only two-thirds of the way to the top.

T. What pictures give you the best idea of the size of these trees?

Miss D. The one representing a coach driving through the trunk of the tree.

T. What would you see if you travelled in the National Park?

H. Geysers and hot springs.

T. How do you know you would? You have never travelled there, have you?

H. No; but I saw the pictures you showed of the park, and in them were many pictures of geysers and hot springs. One geyser was called "Old Faithful."

T. That will do. What other pictures have you seen? Hands.

(Hands are shown from nearly every part of the class. Miss Adams is requested to reply.)

Miss A. I saw a picture of Pike's Peak and Long's Peak.

T. What did I tell you about them?

Miss A. You said Major Pike, after whom the peak was named, tried to climb it in 1803, but failed. He said, "Nothing but a bird could reach its summit." Now ladies, and even children, ride on horseback to the top. A cog-wheel railroad now runs to the top of the mountain, and men stay on the mountain all the year round.

T. Did I say any thing about Long's Peak?

(Miss Adams hesitates, and hands are raised with great eagerness by nearly every pupil.)

T. Well, Master Langdon.

L. You read to us about Miss Bird ascending the mountain with "Mountain Jim."

T. Did *I* read it?

L. No, sir. Miss Foss read it from your book.

T. In these pictures, do you remember how the trees appeared, Miss Foss?

Miss Foss. They seemed to stand alone in clumps, instead of close together as in Massachusetts.

T. How high are the peaks in the Rocky Mountains? Master Peters.

P. The three highest peaks are Mounts McKinley in Alaska, Logan in Canada, and Orizaba in Mexico, all of which are about eighteen thousand feet above the level of the sea. Pike's Peak and Long's Peak are about fourteen thousand feet.

T. Majestic views are obtained from Pike's Peak and Orizaba.

From the chart of comparative heights, show how high eighteen thousand feet is.

(*Peters places before the class the above chart, and shows that Mount McKinley is three times as high as Mount Washington, which has been seen by several pupils, and eighteen times as high as any hills near the school.*)

T. What is peculiar about the highest peaks?

Class. They stand at the extreme ends of the Rocky Mountain chain.

T. Are there glaciers in the Rocky Mountain chain?

Class. Yes.

T. Where?

Class. In Alaska.

T. Well, Master Golden.

G. I read the other day in the supplement to the Boston "Traveller" that on Mount Tacoma, Washington Territory, a large glacier has just been discovered, equal in size and beauty to those seen in Switzerland.

T. Very good, Golden. I saw that account the other day, and was about to mention it.

Railroads and steamers now connect this mountain with Portland and all the country, so we need no longer cross the Atlantic in order to enjoy the view of a river of ice. Master Vincent must enclose that glacier in his putty map.

II — ADVANCED LESSON

T. We have lingered too long, I see, on this part of the lesson, and must proceed immediately to the home lesson, the *Atlantic Highlands and the Plains of North America.*

Miss Porter, *please step to the board, and indicate by two lines the general direction of the two highlands.* (Miss Porter has not thought of that, but bravely goes to the indicated board, takes the crayon, and, after thinking a few moments, draws two lines in the right direction.)

T. Those who approve, raise their hands. (The class are satisfied.)

How do the mountains of North America compare with those of South America, Miss Doyle?

D. They run in the same direction, but those in South America are higher.

T. With those in Europe, Corcoran?

C. The mountains in Europe run mostly from west to east.

T. What name does Guyot give to these Atlantic highlands? Class.

C. Appalachian.

T. Describe their position, Master Wood.

W. Near the Atlantic and —

T. Miss McClellan.

M. The Appalachian Highlands are situated between the Central Plain and the Atlantic Plain, and run parallel to the Atlantic coast.

T. Are they similar in all parts? Class.

C. No.

T. What is peculiar about the southern half, Miss Guierrier?

G. There are several parallel ranges in this part.

T. What different arrangement did you notice in reference to the northern half?

G. The mountains seem to be in groups.

T. Yes, or *detached*, you might say. How many noticed, in studying this subject last night, that there are noted *valleys* between these parallel ranges in the southern part? (Only a few hands are raised, showing that the question went beyond the observation of most in the class.)

You may open your geographies, p. 37, and see how many valleys you can discover.

(The class do so, and soon hands are raised by pupils eager to tell what they have discovered.)

T. Master Batcheldor?

B. There is a valley between the Cumberland and Alleghany Mountains, in which the Holston River flows.

T. That you can call the *Valley of East Tennessee.*

B. Farther north there is a valley between the Alleghany and the Blue Ridge, through which the Shenandoah River flows.

T. Yes; and you can call it what?

B. Valley of the Shenandoah?

T. I asked *you* a question. Please answer it.

B. Valley of the Shenandoah.

T. *The land between the Alleghany and Blue Ridge is sometimes called the "Great Valley."* Do you find any more?

B. The Hudson Valley and the Connecticut Valley.

T. Has any one found another? Master Corcoran.

C. The Mohawk Valley.

T. Yes, that would do, perhaps; but notice, it runs at right angles to the other valleys, and it is much smaller. It is mentioned more frequently in what study?

C. In history.

T. What persons were often seen there then?

C. Indians.

T. What modern highway passes through it? (Master Corcoran does not read the papers, and so has not heard. But several boys are so anxious to tell, they leave their seats, and come with uplifted hands towards the teacher, who is standing in one corner of the room. He selects Master Vincent, the smallest, to reply.)

V. New York Central Railroad.

(This does not satisfy some of the others, who prefer the *Erie Canal*, and the teacher is obliged to tell them that both answers are correct.)

T. There is another noted valley in Pennsylvania. Who will find it? (Several are mentioned, such as the Susquehanna and Juniata Valleys; but these do not satisfy, and the teacher adds the *Cumberland Valley*.)

Begin at the southern part of the highlands, and name in order the different ranges and groups of mountains. Miss Wallis, you may locate them at the same time on this outline map. (Miss Wallis points out and locates as follows:)

Cumberland Mountains in Tennessee, Alleghany in Virginia, Blue Ridge in Virginia and Pennsylvania, Catskill and Adirondack in New York, Hoosac in Massachusetts, Green in Vermont, White in New Hampshire, and — (A score of hands are raised, and half a dozen crowd about the desk, eager for the opportunity to supplement deficiencies in Miss Wallis's recitation. The teacher chooses Master O'Brion.)

Master O. She omitted the mountains in Maine, and the Wotchish in Canada, and the Taconic between Massachusetts and New York.

(Master O'Brion sits down feeling well satisfied, and wonders why so many hands are still eagerly raised.)

T. What else, Miss Lowe?

Miss L. Miss Wallis omitted to say that the Cumberland separate Virginia and Kentucky; that the Alleghany separate Virginia and West Virginia, and are found in West Virginia and Pennsylvania.

T. Master Wood.

Master W. How can the Alleghany separate Virginia and West Virginia, and then be found *in* West Virginia also?

T. Miss Lowe, defend your statement.

Miss L. Why, the Alleghany Mountains consist of three or more parallel ranges. The middle range is on the State line, and the western range is in West Virginia. Farther north the line separating the States runs farther east, and nearly the whole range is in West Virginia.

T. Master Wood, do you see the advantage of forming a perfect mental picture of the map?

Master Wood (very quietly). Yes, sir.

T. Miss Long still has her hand up, and she is asked to speak.

Miss L. Miss Wallis did not speak of the peaks.

Miss Wallis. I was not asked to do that, but I know them.

T. Miss Wallis was not expected to speak of them. Miss Long may tell us about the important peaks.

(Miss Long is not prepared for this sudden call, and makes a poor recitation. The teacher then called on Master Edmunds.)

Master E. Mount Washington, the highest peak in the White Mountains, is the best known of any of the peaks, because it is so frequently visited. I went to the top of this mountain last summer with my father. We left Boston at six o'clock in the morning, and reached the foot of the mountain about one o'clock. In about an hour we were at the Summit House, on top of Mount Washington. The day was very fine,

and we could see a long distance. I enjoyed very much the two hours spent on the summit. We ate our luncheon on the rocks looking down towards the Glen House, which appeared very small and directly below us. At three o'clock we took the train to descend. Reached Boston about ten o'clock in the evening.

T. Very good. I like to hear of these personal travels. How many in the class ever visited the top of Mount Washington? (Six boys and two girls raise their hands.) How many have ever seen the mountain? (Fifteen pupils respond.)

(Miss Gage gives her experience of waiting a week at the Fabyan House for a good day in which to make the ascent. Master Parker was at North Conway last summer when the Appalachian Club stopped there, and he wanted to go with them on some of their excursions, but his father would not let him. He saw some lady teachers who were members of the club and climbed the high mountains, and a little girl only fourteen years old, the daughter of a professor in New York, went everywhere her father did, and took all the hard tramps.

Several other accounts were given about Mount Washington. Miss Perry brought about twenty stereoscopic pictures and her stereoscope, which were passed round.

Several boys had been to the top of Mount Mansfield; one had spent a summer near Mount Monadnock in Jaffrey, N.H., etc., etc.)

T. Master Jenks may tell us about the peaks in the Black Mountains now.

Master J. Several peaks among the Black Mountains are higher than Mount Washington, such as Mitchell's and Clingman's. According to our geography, the latter is about four hundred feet higher than Washington. This peak was named after Gen. Clingman, who measured several mountain-peaks among the Balsams, Smokies, and Blacks in North Carolina. Mitchell's Peak was named after Professor Mitchell of the

State University, who made barometrical measurements of these mountains, and was the first to announce their superior height to the White Mountains. In the summer of 1857 he lost his life by falling down a perpendicular precipice, while crossing the Black range. He is now buried on the top of the mountain which bears his name.

My father has spent several summers in this region. He says there is a good deal of timber there, much of it very valuable, the trees extending to the summits of the mountains. The fishing and hunting are excellent. I have an older brother who is hunting and camping out among these mountains now. My father brought home from North Carolina many specimens of valuable gems. He also found there a large emery-mine.

T. Very good. It is said that fifty-seven peaks in North Carolina are over six thousand feet in height. The Blue Ridge is the water-shed of this system, as no stream severs it. According to geology, as set forth in Shaler's First Book, on the desk, the mountains of North Carolina were the first lifted above the sea, so they are the oldest; hence one high peak is appropriately called the "Grandfather." (See "Heart of the Alleghanies," p. 261.) There is a section of North Carolina situated in Macon County, in the south-western part of the State, which is an elevated plateau over four thousand feet high. Owing to its altitude, nearness to the ocean and Gulf Stream, and the great abundance of vegetable life and pure moving water, it is rapidly becoming known as a health resort. Perhaps in the future it will be visited more than the White Mountains for this purpose.

What have I just told you?

Miss Webster repeats it with commendable accuracy.

T. Those who have lived there all their lives thus describe this country: —

"The entire region is mantled with forests to the summit of every peak; the valleys are cleared, and inhabited by a happy,

healthy, and hospitable people. It is rich in picturesque scenery, romantic rivers, luxuriant forests, majestic mountain heights, valleys of exquisite beauty, quaint villages, cliffs, and waterfalls. It is rich in a life-giving climate, brilliant skies, fertile lands, pastured steeps, and timber and mineral wealth." [1]

After two boys had recited the gist of the above, the teacher said: I made no mistake in calling on Master Jenks, you see, class. I hope every one of you will be as ready as he to learn various facts from your parents, uncles, and aunts. The next may talk about the Central Plain.

Miss Atwood. According to Guyot, the eastern or main slope of North America descends gradually from the Rocky Mountains to the Atlantic, interrupted only by the Appalachian system, or secondary highlands. The long interior slope between these two highlands is called, very properly, the Central Plain. As shown on this sand-relief map, it extends from the Gulf of Mexico to the Arctic Ocean, bordered on each side by the two highlands. It is triangular in shape, narrow at the south, and very broad at the north. It is divided into two slopes by the height of land just north of the Great Lakes. These slopes are very gradual.

T. What slopes?

Miss A. The slope towards the north, the one towards the south.

T. Master Jones.

J. The one towards the west is very gradual also. I was talking with a neighbor who went to Denver last summer, and he said the ascent was not noticed at all as you rode along through Kansas and Colorado.

T. How high is Denver?

Master Jones. I think, about five thousand feet.

T. Who *knows* how high it is?

Miss Thomas. The Gazetteer says it is fifty-two hundred feet above the sea.

[1] Zeigler's Heart of the Alleghanies, p. 12.

T. How does the approach to the Rocky Mountains at this point differ from the approach to the White Mountains? (Several incorrect answers are given.) What can you see from Denver?

Class. The two lofty peaks, Long's Peak and Pike's Peak.

T. What does that show?

Master Mulligan. It shows a clear atmosphere.

T. Yes. If you remember the solar-camera pictures, or if you have ever seen stereoscopic pictures of the Rocky Mountains near Denver, you can see in these pictures, by looking carefully, that the great western slope of the Mississippi Valley continues to the very foot of these lofty mountains, without the interruption of any outflanking hills. The Black Hills of Dakota are an exception to this statement.

How does the gradual slope affect commerce?

Master Ryan. Makes the rivers large.

T. Not necessarily.

Master Hatch. Prevents cascades, and so makes them navigable.

T. Yes. One other point. (After several thoughtful replies have been given, the teacher speaks of the many rivers flowing from the Rocky Mountains *parallel* to one another.)

T. What advantages do the farmers living in this country have over those in New England?

Miss Forbes. It is easier to cultivate a farm which is level.

Master Pinkham. They can use machines better, such as the mowing and reaping machines. I have read in the papers that some of the farmers had engines which will move on the prairies.

Master Pike. They can build railroads easier.

(After Miss Hayden gave the main facts in reference to the Atlantic Plain, the teacher read from the August, 1885, "Atlantic Monthly," Mr. Warner's account of "The Lost Pocket-Book in the Mica Mining Regions of Roan Mountain, North Carolina.")

PART II

A RECITATION IN A SIXTH-YEAR CLASS

Subject — Climate of North America

Object of the Recitation. — 1. To ascertain if the pupils had learned the facts given them on the charts hung up the day before, which facts had been copied into their blank-books at the end of the previous lesson. (See p. 295.) 2. To ascertain how fully they understood and remembered the explanation given by their teacher in the previous lesson in reference to these facts. 3. To hear their extra facts learned from outside sources.

Preparation made by Pupils. — Study of their blank-books, containing the epitome of the climate of North America given on p. 300. Study of the short paragraphs on *climate* in their text-book.

Consultation of the following books, etc.: Dodge's, Redway's, King's, and various other geographies; Universal Encyclopædia. Lippincott's Gazetteer; "A Tour in the United States and Canada;" Jackson's "Alaska;" "Across the Continent," by Bowles; "Glimpses of the Earth," by Blakiston; "Arctic Explorations," by Kane; "Mission of the North-American People," by Gilpin; the Malte Brun Geography; "Iowa Handbook," by Parker; "The Resources of California," by Hittel; "Life in the Rocky Mountains," by Miss Bird; "Three Years in Mexico," by Stephens; "Newfoundland," by Hatton; Geographical Readers by Johonnot, Philips, Blakie, and the Standard Geographical Reader; physical geographies, newspapers, magazines, letters from friends, etc.

Preparation made by Teacher. — Consultation of Gilbert's Physical Geography; Johonnot's Geographical Reader; Dr. Kane's "Arctic Explorations;" "North America," by Russell; Shaler's "Our Continent;" "American Explorations," by Nourse; "The Round Trip," by Codman; Hayden's "Geographical Surveys;" "Meteorology," by Davis; "Appalachia;" "The Golden State," by McClellan; "Mexico," by Ober; "Alaska," by Dall; "California," by Mrs. Dall; "Santo Domingo," by Hazard, and "Greenland," by Rink.

THE RECITATION.

(Reported by Miss Melissa Dornbach, one of the pupils. Pupils called by card after the question was asked.)

Teacher. What causes affect climate?

Master Woodsum. The latitude, winds, elevation, slope, currents, moisture, and surface.

T. Into what *belts* of climate would you divide North America?

Miss Barnes. Into three belts, — the northern, central, and southern.

T. Draw lines to show these belts upon this outline cloth blackboard.

(Miss White draws the lines, and they are slightly changed by the criticisms of the class.)

T. Name the *countries* in the northern belt.

Master Lane. Iceland, Greenland, most of British America, and northern part of Alaska.

T. Name the countries in the central belt.

Miss Hussey. Canada, the United States, British Columbia, and —

T. Miss Whiton.

Miss Whiton. Southern part of Alaska.

T. What countries in the southern belt?

Master Kearns. Mexico, West Indies, Florida, and Texas.

(Many hands are raised the moment the last word is uttered, and forty pupils are eager to substitute *Central America* for the unfortunate Texas.)

T. What causes affect the climate in the northern belt?

Miss Way. Latitude, exposure to north winds, and currents.

T. What currents?

Miss W. The current from the Arctic, and the Japanese current.

T. The next may represent those currents on the outline of North America.

(Master Dove draws arrows with red crayon to show the direction of the Arctic Current, from Baffin Bay, through Davis Strait, and along the coast of Labrador; and with green crayon represents in a similar manner the direction of the Japanese Current along the coast of Alaska.)

T. Have all the causes been given? Hands. Miss Colton.

Miss Colton. No, sir; snow and ice.

T. Is snow found here the year round, Master Huse?

Master Huse. Yes, sir, in many places.

T. Miss Way?

Miss W. I think more ice is seen there than snow. Kane in his book has a great deal to say about the ice.

T. Miss Hatch?

Miss Hatch. The ice is in the form of icebergs.

T. Do you think most of it is in that form?

Miss H. Yes, sir.

(Many hands are raised, especially on the boys' side.)

T. What do you say, Master Bedford?

Master Bedford. Dr. Hayes, in his book, "The Land of Desolation," has much to say about the formation of an iceberg; but he speaks of seeing miles and miles of ice on the land and on the sea, and only now and then of seeing an iceberg. I think there is more ice there in glaciers and in fields of ice than in icebergs.

T. Yes, you are right. Are the fields of ice smooth?

Master B. No; they are usually very rough.

T. Have you seen any pictures of icebergs?

Master Merrill. Yes, sir; you showed us several pictures with the solar camera.

T. How high were the icebergs?

Master M. They were in some cases two hundred and fifty feet, and in one three hundred and fifty feet high.

T. Is most of the ice in sight in these bergs?

Master M. No, sir; three-fourths is below the surface of the water.

T. *Three-fourths?* Master Bedford?

Master B. Dr. Hayes says *seven-eighths* is below the water.

T. Huxley says ice usually floats so that only one-tenth is above the water. The pupils had better experiment, and report to me in two days from now.

The next may tell me what the climate is in the northern belt.

Miss Willey. Frigid; ground frozen during the year; Hudson Bay can be entered during only six weeks; in some places the sun is not seen for several days; snow falls every month.

T. Do you think, Miss Willey, the ground never thaws out?

Miss W. I don't know.

T. Does any vegetation grow there?

Miss W. I suppose so.

T. How can it grow if the ground remains frozen during the year? Master Dove?

Master Dove. It thaws out on top during the summer.

T. And it remains constantly frozen below. The pupils who have learned from their reading additional facts may now present them.

Master Houghton. The average temperature in summer is fifty-nine degrees above zero; in winter it is forty-two degrees below. It is ten degrees colder on the west side of the Atlantic Ocean on the sixtieth parallel than in the Baltic Sea.

T. Why?

Master H. On account of the Arctic Current and the Gulf Stream.

Miss Phelps. Dr. Kane says in his book that no natural cold can arrest travel. He says he has walked sixty miles over the roughest ice, when the thermometer was fifty degrees below zero.

T. Very good. In which one of his books did you see that fact?

Miss P. In "Arctic Explorations," vol. 2.

Master Burns. The snow in winter sometimes falls nineteen feet in a day.

T. Such a statement hardly seems possible.

Miss Phelps. Dr. Kane says, in his "Land of Desolation,'

that at one time about midnight the sun moved round to the north, gradually sunk lower and lower till its upper part was just above the horizon, and then the sky became uniformly golden.

Miss Smith.

"The lands are there sun-gilded at the hour
When other lands are silvered by the moon:
The midnight hour, when down the sun doth pour
A blaze of light, as elsewhere at the noon."

T. Where did you learn that? It is very appropriate.

Miss S. In "The Land of Desolation."

Master Hinckley. In the Arctic regions, sixty degrees above in the shade seems very sultry.

(The teacher then read a short extract from Hall's "Voyage in the Polaris," giving an account of the joy experienced by his men when the sun returned after an absence of one hundred and thirty-two days; and Miss Hayden read De Long's graphic description of "An Arctic Winter Night.")

T. What causes affect the climate in the central belt?

Miss Dornbach. The latitude. Mountains. Elevations.

T. Very well. Miss Hicks.

Miss Hicks. Moist south winds from the Gulf and Atlantic Ocean. Different currents, such as the Gulf Stream and Japan Current. West winds from Pacific.

T. Master McLane may go to the board, and write some of the *facts* about the climate.

Master McLane wrote the following: —

Four Seasons Atlantic coast
Moist Central Plane less moist
Pacific coast very dry

(Two-thirds of the room were now on their feet, with hands raised, eager for a chance to correct. The teacher waved his hand, and all was quiet. He called the next card, — Master

Thomas. Master Thomas arose, looked at the blackboard, but said nothing.)

T. I am surprised! Miss White.

Miss White. He has no periods. He has misspelled "plain." And he has omitted several things: as, temperate should stand first, and be underlined because so important. After "Atlantic coast" should be given "lower half Mississippi Valley." Before "very dry" should be given "(except west of Sierra Nevada and Cascade Range)."

T. Very good. You may write it all out on paper, and bring to desk. Who can correct the board? (A dozen hands are raised. Miss Evers is chosen. Master Darling was then called upon to give the facts of climate orally, which he did, as Miss Evers was writing.)

T. Explain "Pacific coast very dry."

Master Holt. Would not the expression Pacific highlands be better than Pacific coast?

T. How many agree with Master Holt? (Most of the hands are raised in favor of the change.) You are right, Master Holt. Go on.

Master H. The Pacific highlands are elevated, and so surrounded by lofty mountains, that the moist winds from the sea are prevented from reaching them. This region is cut off from the west winds of the Pacific by the Coast Range and the Sierra Nevada. It is hemmed in by the great Rocky-Mountain chain on the east. The west winds, full of moisture at the shore, strike against the mountain barrier, and give up their moisture in the form of rain or snow. So it is with the east winds, and hence this section is very dry.

(After the causes and facts in reference to the climate of the southern belt were briefly given, the teacher called Miss Nann to go to the blackboard.)

T. Please draw, with red crayon, a perpendicular line near middle of board. Now write near top left column, with yellow

crayon, "Northern Belt." Above right column, "Southern Belt." Class do the same on paper. Compare the two belts.

(Miss Nann, unaided, made the following comparisons:)

NORTHERN BELT.	SOUTHERN BELT.
Colder.	Warmer.
Abundance of ice and snow.	Ice and snow rarely seen.
Cold winds.	Calms.
Ground frozen constantly.	Frost rarely heard of.
Heavy snowstorms.	Heavy thunder-storms.
Not enough sunshine.	Too much sunshine.

(The following different comparisons were contributed by various members of the class, and written on the blackboard by the teacher:)

NORTHERN BELT.	SOUTHERN BELT.
Days and nights very unequal.	Days and nights equal.
Sun's rays oblique.	Sun's rays perpendicular.
People live in close huts.	People live out doors.
People wear furs.	People wear little clothing.
People eat meat and fat.	People eat fruit and rice.
Unambitious.	Lazy and contented.

T. It is now the 6th of January. Tell me, Master Dorsey, what the climate is in Southern California to-day.

Master Dorsey. I don't know.

T. Master Mooar.

Master Mooar. If we should leave Boston to-day with the thermometer at zero, and the ground covered with six inches of snow, and visit Los Angeles in the southern part of California, we should see the people wearing, instead of overcoats and seal-skin caps, and furs, thin summer clothes; instead of sitting about a stove or register in the house, sitting out doors on the piazza, or under the shade, or gathering roses and heliotrope from the garden; while the boys would be picking oranges or bananas.

T. That is not quite true about the thin clothing, as the nights are cold. The climate is like ours in September. The average winter temperature is about fifty-four degrees.

T. Compare the climate in the central belt, Atlantic side, with the countries exactly east across the ocean.

Miss Peters. Shall I write it on the board?

T. Yes.

CLIMATE OF

Europe, 40° N.	United States, 40° N.
Naples.	New York.
Equable.	Changeable.
Mild winters.	Cold winters.
Warm summers.	Very hot summers.
North and south winds.	East and west winds.
Sky cloudless for months.	Clouds and rain frequent.
Trees in leaf in March.	Trees in leaf in May.
Malaria common.	Very healthy.

T. What was told you about the climate of Sitka? Miss Porter.

Miss Porter. The climate there is moist and warm. In most winters the thermometer does not register below zero; only four times, I believe you said, in forty years. In one winter the ice only formed once, and then it froze only about as thick as a knife-blade. Sitka is warmer than Boston. It is about as warm as Kentucky.

T. Give the cause.

Miss P. This mild climate so far north is due to the Japan Current, the Gulf Stream of the Pacific Ocean.

T. What was said about "jerking meat"?

Master Jenks. The climate in Nevada is so dry that fresh meat dries by hanging it up, so as to keep sweet for months. The same is true of Southern Dakota. You also said the snow is evaporated without turning to water. It disappears into the air.

T. How many remember what I read you yesterday from "Appalachia" about the climate of Cuba? (A dozen hands are raised.)

Master Tufts. In the morning there is a land-breeze. The sea-breeze or trade-wind sets in about ten o'clock. Soon clouds begin to appear, and usually a local shower begins about one o'clock. By three o'clock it is generally fair again.

T. I am pleased to notice your interest in the subject; but the time is nearly gone, and we will try to finish the lesson to-morrow. Meanwhile review the facts in the blank-book, make notes of the new facts learned to-day, and bring in as much additional matter as each can find on the climate of North America.

THE NEXT DAY.

Teacher. (After five minutes in review.) All listen carefully, now, to my story.

Imagine it to be Feb. 1. I am sailing southward up a river. The land along the banks is covered with the richest vegetation; flowers in bloom on every side. The people are busy in gathering large crops of large-sized oranges. In what belt is it? Class.

Class. Southern belt.

T. Who can tell exactly where? (A dozen hands are raised. After one or two failures, Master Forbes answers correctly: The St. John's River, Florida.)

T. Miss Peters may give a description.

Miss Peters. It is the last of May. Few clouds are in the sky. The thermometer stands at eighty in the shade. Thick clothes are uncomfortable. The warm sun has caused the grass to grow. Birds are building their nests, and flowers are abundant. In what belt?

T. Master Holt?

Master Holt. In the central belt. It may be in New England.

(The teacher reads: "It is June. The temperature has slowly risen from thirty-five degrees below zero to thirty-five degrees above. The whiteness which has so long clothed the hills and valleys is giving way under the influence of the sun's warm rays. The torrents of the melted snow are dashing wildly down the rugged gorges, or bounding in cascades from the lofty cliffs, and the air is everywhere filled with the pleasing roar of falling water. The sap has started in the willow stems, while ice and snow yet lie around the roots. The air is filled with the cry of birds; flocks of eider-ducks sweep over the harbor in rapid flight. The seals lie basking in the warm sun. Crowds of icebergs are sailing out of the sound towards the south, their crystals tumbling from them as they go." [1])

What place does the author describe? (Many hands are raised.) Master Pike?

Master Pike. Alaska.

T. It is possible. Master Darling?

Master Darling. I think it is near Greenland.

T. Why?

Master Darling. Eider-ducks are found there.

T. You are right. Hayes was then in Smith Sound. Miss Dornbach may give a description.

Miss Dornbach. Can I read it?

T. Yes.

D. It is summer. The nights are oppressively warm; the days so hot, no one ventures to go out in the sun. Every thing is drying up. The cocoa-palms wave their long leaves wildly in the wind. The bananas and mangoes are crying for rain. Fearing the dangerous fever common to the country, I arise at four o'clock A.M., take the morning train at five, and soon begin to rise higher and higher as I go away from the coast. In a few hours I am twenty-five hundred feet above the sea, in a new climatic zone, and dare to breathe the pure air without fear of

[1] Altered from Hayes's Open Polar Sea.

the yellow fever. The breezes here are cool. Oranges, apples, and peaches abound, instead of palms. The houses are more substantial. Higher and higher I ascend, through tunnels, over gorges, winding about. The air by and by is decidedly chilly, almost frigid. I put on my wraps. The hills are covered with oak woods, the pastures covered with green grass. It is eight thousand feet in height. Then I descended into a valley where the temperature is about seventy-five degrees. The mornings and nights are cool; the climate, temperate. Where did I make the journey?

T. Hands. (A score are eagerly raised.)

Class. In Mexico.

T. When did you prepare that?

Miss D. Last night.

T. From what books did you get your facts?

Miss D. Ober's "Mexico," and "Three Years in Mexico" by Stephens, and what you have told us.

T. Very well done. The class should imitate Miss Dornbach. We are ready now for facts in reference to either the central or southern belt.

(Many facts were given. The most interesting were: —

Gilpin says the climate of the Rocky-Mountain plateau is so healthy and pleasant, houses are not necessary. For six years he slept most of the time under the open sky. The valley of the Mississippi would be a rainless desert, if the trade-winds were not deflected northwards by the mountains in the eastern part of Mexico. The moisture from the Gulf of Mexico is easily carried northward because the shores of the Gulf are everywhere so low, scarcely above the sea level. Miss Bird says the climate of Colorado is considered the finest in the world. The air is very dry; the rainfall below the average. Dews are rare, and fogs unknown. The sunshine is bright, and three-fourths of the days are cloudless. People sleep out doors six months of the year.

Barnes's Geography says that the storms passing over the North Central States originate in the Rocky Mountains, and travel eastward.

King's Geography says that the intense heat of the West Indies is modified by the trade winds.)

T. The pupils who have selections may read as far as there is time.

(One pupil read about a sudden storm, which Dr. Hayes describes in "Land of Desolation."

Another read N. P. Willis's contrast between the climate of Europe and America, as given in Johonnot's Geographical Reader. Master Jones read an account from some newspaper, of a family buried for three days under the snow in Nevada. Another pupil read about "The Black Man's Paradise in Jamaica."

Master Jenks read part of a letter from his father in the mountains of North Carolina, describing the healthfulness of that region.

The teacher read from Jackson's "Alaska" Joseph Cook's account of the two great oceanic currents.[1] He also read the following extract from a friend's letter: —

"HALF-WAY HOUSE, JAMAICA, Nov. 30.

"It is interesting to notice the nonchalance with which these people are preparing for winter. They have not stopped a crack in their houses, — and their houses are nearly all cracks; they have not harvested a potato, nor put a ton of hay in the barn, — of course not; they have no barns to put it in, and do not appear to be inclined to build any; they do not know what barns are. There is nothing in the cellar for winter, — they have no cellars, don't know any thing about them; and, strangest of all, they have precious little in their houses. They do have houses, some of them; others have only little bamboo huts, that keep off a little sunshine and rain.

"It is rarely that you can find food enough in a house for a lunch, at any time except lunch-time. They live 'from hand to mouth,'

[1] Page 297.

some one might say. No, not so much as that even; for it is easier to leave the food in the ground, or on the tree, till it is wanted, than to find houseroom for it.

"In the ground are yams, potatoes in variety, cassava, arrowroot, etc. On the trees are cocoanuts, bread-fruit, — I had some for dinner, — chirimoyas, sweet sops, sour sops, avocato pears (sometimes called alligator pears), bananas, plantains, pineapples, oranges, limes, mammees, granadillas, coffee, chocolate, nutmegs, cinnamon, vanilla, — well, a whole pantry outfit; every thing good for man or beast, to be had almost for the taking, at any hour, all the "delicacies of all the seasons."

Suggestive Questions.

1. How many different maps have you ever seen of North America?

2. What is the difference between a physical and a political map of North America?

3. Why is color used on the political map? What does it signify?

4. What other matters are shown on such a map besides location?

5. What kind of a map shows elevation best? Why?

6. Are all the features of North America shown on any one map? Why not?

7. Is north always at the top of a map?

8. In crossing North America from east to west how would the country appear?

9. What other country would be similar in appearance?

10. If a pupil looks for the *real* North America instead of the map of it, where would he find it?

11. Which side of North America is the longest?

12. What irregularity in the coast on one side has a similar one on the other side?

CHAPTER XI

FIVE YEARS' COURSE OF STUDY

THE proper object of the teacher's most profound study is not, then, the course of study, or the text-book, but the child himself.

S. T. Dutton.

BOOKS FOR CONSULTATION

Crocker's Methods of Teaching Geography.
Geikie's Methods of Geography.
How to Teach, by Kiddle and others.
Johnson's Physical and Descriptive Geography.
Hughes's Class-Book of Modern Geography.
Peavey's Manual of Geography.
Reclus's The Earth and its Inhabitants.
Richardson's School Manual of Modern Geography
Stanford's Compendium of Geography and Travel.
Nichol's Topics in Geography.
Longman's School Geography.
Dodge's Reader in Physical Geography.
Herbertson's Man and his Work.
McCormick's Practical Work in Geography.
McMurry's Special Method in Geography.
Seeley's Story of the Earth.
Trotter's Lessons in the New Geography.

CHAPTER XI

FIVE YEARS' COURSE OF STUDY

IMPORTANCE OF PROPER CLASSIFICATION OF TOPICS — FIRST YEAR: WHAT TO STUDY — TALKING AND READING — HELPS — PRACTICAL SUGGESTIONS. SECOND YEAR: SAME SUB-TOPICS AS FIRST YEAR.

THE proper arrangement of topics for the different classes is one of the most important matters connected with the *topical* study of geography. In many schools such an arrangement is never attempted; in only a few is it wisely done by practical teachers who desire to carry out their own theories in real teaching. Wherever this arrangement is neglected, a vast amount of time is wasted through foolish repetitions, the teaching of useless details, and the presenting of subjects in an unphilosophical order. Time is also wasted because the work of the lower teacher does not fit into and prepare the way for that of the upper. The proper arrangement of topics for each class is just as important and beneficial for the school as the programme of studies is for the city. The latter is quite general in its character, and is usually prepared by the superintendent of schools; the former enters largely into details, and can best be prepared by inspectors, assistant superintendents, or the principal of the school. Each arrangement should be more or less individual, and adapted to the requirements of the particular school in which it is to be used.

In the preparation of such an arrangement, much assistance can be obtained from consulting such valuable works as *Methods of Teaching Geography*, by Miss Lucretia Crocker, late supervisor of Boston schools. Type *Studies from United States Geography*, *Excursions and Lessons* by Prof. Charles A. McMurry, *Home Geography* by Prof. Fairbanks, and King's *Elementary Geography* are four books most helpful in observational work. *Topics in Geography*, by W. F. Nichols, Holyoke, Mass., will not only help teachers in arranging topics correctly, but also assist them in teaching these topics. *How to Teach*, by H. Kiddle and others, New York, is also recommended.

The arrangement of subject matter for study presented below is founded upon the requirements in geography in a large city, where the schools are well graded. Its practical working is only possible under such circumstances. Each teacher must contract or enlarge it to suit his own school. The attempt is made in this and the following chapter to arrange subjects according to the mental capacity of the pupils, to present them in a natural order, and to give each class some advance work to do. It is believed, if such an assignment of geographical work were carefully followed in a school, it would save a large amount of time now wasted by repetition and drill on non-essentials. The pupils the first year are supposed to be about nine years of age.

FIRST YEAR OF STUDY

I. Concrete or Observation Geography.

a. Observe objects in the room, and describe them.

Observe pictures and tell the objects given in different parts of the picture.

Observe specimens such as leaves, plants, flowers.

b. Field lessons. Observe the type forms in field or park, such as plain, valley or hill. Study the soil.

c. Weather, sun and moon observations. Observation of the action of rain on the earth.

II. Study.

a. Study distance, direction, points of the compass.

b. Study map language.

Test the pupils in measuring distances and length, with the eye and with a ruler.

Make a plan of the desk; then with objects upon it; schoolroom, ground-floor, school-yard.

Explain and draw to different scales.

Read map symbols on wall maps.

Study the surface of the town, boundary-lines, then draw maps of immediate vicinity from pupil's own observation. Study maps of vicinity. (See King's Elem. Geog., Part I.)

c. Simple study of home State.

d. Journey Geography. (See King's Elem. Geog.)

e. Study the world as a whole. (King's Elem., Part III.)

Form of the world illustrated. The two motions *stated.*

Show from globe hot parts, cold parts; zones, four hemispheres, two continents, six grand divisions, seven oceans. Direction and comparative size, as Asia, largest; Europe, smallest; Africa, second.

III. Talking and Reading.

Talking. — Tell an imaginary journey; as, to New Hampshire for hay, to New York State for salt, or to New York City to see the Brooklyn Bridge, to Pennsylvania for coal, to California for gold, etc. Talk about school district, parish, ward, villages, native town; about San Francisco; post-office, express business, divisions of time.

READING. — Read about the surface of the town or city.

Local animals.

Characteristic animals in each grand division.

Occupations and habits, dress and mode of life, of people far away, as Chinese, Japanese, Bedouins, Esquimaux, exiles in Siberia, Hottentots, etc.

READING. — Read from Scribner's Geographical Reader, King's and Dodge's Elementary Geographies, or *Our World* No. 1; *Seven Little Sisters, Each and All*, Miss Andrews; *Underfoot*, Miss Nichols; *Animal Life*, Miss Marwood.

HISTORY. — *Stories* of voyages, of discoveries, of settlements of New England, of the Revolution, of progress and inventions.

IV. Helps.

Globes, hemispheres, maps, colored crayons, large wall pictures to go with *Seven Little Sisters*, large colored and plain photographs, drawing paper, rulers, pencils, magnifying-glass, etc.

OBJECTS. — Fur, leather, spices, nests, eggs, stones, shells, toys; any kind of articles, obtainable by loan or otherwise, referring to foreign countries.

Pictures of animals, — Prang's Natural History Series in six small books. Pictures of places, of cities, mountains, rivers, costumes, etc., such as are found in geographies and books of travel, if stereoscopic and photographic pictures are not accessible.

BOOKS (in addition to those given under Reading) for consultation: *Science Primers, Physical Geography, Astronomy;* Fairbank's *Home Geography; Our Cousins; Little Lucy's Wonderful Globe*, Miss Yonge; *Life and her Children*, Miss Buckley; *Little Folks in Feather and Fur;* Rollo Books.

PRACTICAL SUGGESTIONS

Each class should have its advance work, its outside or extra work, and its review work. The advance and review work is placed under "II. Study." The extra work comes under "III. Talking and Reading." It can be called "Special Oral Geography." Great freedom and latitude should be allowed the teacher under this head. It may be wise for the teacher to omit or change much herein arranged. *Each topic should be touched upon in the most simple and elementary way.* Frequent repetitions will be necessary. Allow the scholars to tell all they know first. No especial order is necessary in taking up the topics under "III." The more "Study" and "Talking" can be mingled together, the better. It is desirable to take these topics together, instead of consecutively. The reading exercises from the books given, or their equivalents, will furnish excellent opportunities for language and talking lessons.

The first field lesson should be taken near the schoolhouse. The number of children taken at such times should be only as many as the teacher or teachers in charge can readily take care of. The same order as in the schoolroom should not be expected.

Type forms include plain, hill, valley, mountain, plateau, water-parting, slope, brook, branch, basin, source, mouth, peninsula, cape, isthmus, bay, gulf, strait, etc.

SECOND YEAR OF STUDY

I. Study.

Brief study of the grand divisions by *Journey Geography.* Special study of North America. (See Schedule I., Chap. III.)

II. Talking and Reading.

a. Talking.— Characteristic *fruit* of each grand division.

Races. The occupations of the people, their homes and amusements. Habits of children in different countries.

Characteristic *products* of each continent. Plants used for food, clothing, fuel, medicine, building-material. Industries of the town; the railroads.

Useful plants, vine, palm, rice, sugar-cane, dye-woods, cotton, rubber, coffee, tea.

What is found under the surface of the earth, — building-stones, coal, metals, gold, silver, etc. What is found in water, — fish, whales, salt, corals, sponges, etc.

b. Reading. — Finish books in Class Four. *Little People of Asia*, Miller; *Herbertson's Readers; Carpenter's Readers; Hunting Adventures*, Knox; *Adrift in the Ice Fields*, Hall.

History. — More stories on the same subjects mentioned in First Year's Work. Also stories of the Presidents, of social and industrial life, of the Civil War.

III. Helps.

(*See Fourth Class, p. 230.*)

Objects. — Minerals, ores, coal, whalebone, cotton, indigo, oranges, bananas, lemons, articles on breakfast-table, etc.

Pictures. — Vegetable life (see Swinton's Grammar School Geography), fruit-trees, mining, hunting, fishing, and other industries (see Appletons' Geography), Indians, Esquimaux, etc. Twelve series of Geographical Readers.

Books for Consultation. — Those of Class Four. Also, *How Plants Grow*, Gray; *Science Ladders*, Nos. 1 and 3; *Boys of Other Countries*, Taylor; *Round the World, by a*

Boy, Smiles; *Spectacles for Young Eyes*, Landor; *Rocky Mountains*, Miss Bird; *Santo Domingo*, Hazard. *Arctic Regions*, by Hayes, Hall, Kane, Markham, Greely, Peary.

PICTURES. — Pictures of cities in the geographies; bird's-eye views (see King's, Harper's, and McNally's); mining-operations, whaling, cotton-field, cotton-mill, rice-fields (King's Advanced Geography), sugar-cane field (McNally's, p. 85); Niagara Falls (see Warren's, and fourth volume of any geographical series); public buildings, as Capitol at Washington, at Albany, Old South Church, Boston, Independence Hall, New City Hall, Philadelphia (Dodge's and King's Geographies). Excellent pictures will be found in any of the sets of Geographical Readers, such as Carpenter's, King's, Philip's, etc. Good pictures of the cañons of the Colorado, of irrigation, mining, lumbering, big trees, wonderland of the Yellowstone, etc., can be found in King's, Dodge's, Frye's Geographies; *The Atlantic Islands*, Benjamin; *Niagara; American Scenery; Homes of America*, Lamb; *American Pictures*, Manning.

BOOKS FOR CONSULTATION. — (See Fourth and Fifth Classes.) Dryer's Physical Geography; *Heart of the White Mountains*, Drake; *The Great South*, King; *Rocky Mountains*, Miss Dall; *Indian Traits*, Thatcher; *Greenland*, Hayes; *Races of Mankind*, Brown (vol. i.); *Underfoot*, Miss Nichols; Physical Geography, Geikie; Science Primers, — *Natural Resources of the United States; Mines and Mining*, Jones; Commercial Geographies by Redway, Adams, Trotter.

PRACTICAL SUGGESTIONS

In taking up North America in this class, very little time should be spent on position, on the *names* of places, mountains, or rivers, as such and unassociated with some

interesting fact. But human and animal life, productions, commerce, imaginary journeys, all that is wonderful, grand, and marvellous, should receive all the time circumstances will allow. *Remember, children learn indirectly and by association.* North America is not to be studied now as it may be when the United States is under consideration. Try to get the children to talk, to tell a continuous story about the subject. Let the first maps be drawn on the north side of the room.

No piece of apparatus is more valuable than the outline map painted on the blackboard in oil, for it can be used in such a variety of ways, both in teaching and in recitation. The helps mentioned above, or their equivalents, are easily obtained in most cities in this country, by a little effort on the part of the teacher. The pupils themselves will gladly help. Get one new piece of apparatus at a time, one specimen, one picture, one book. Splendid pictures are found in the various sets of geographical readers.

The children will become intensely interested if the teacher will spend half an hour a week in talking about and asking questions in reference to subjects they know something about already: such as the post-office; express business; any leading industry near the school, in which some of the parents are engaged; the common animals and insects that are found near the school; the inequalities of the surface near by. In developing any of these topics, the teacher should at first, by questions, call out all the information possessed by the pupils. The blackboard should be used for illustration, and to record the points made from simple illustrations used; as, postage-stamp, envelope, etc., when the post-office is the subject.

THIRD YEAR OF STUDY

I. Study.

a. United States as a whole, topically (using topics similar to those given in Schedule II., Chap. III.

Ask pupils to tell of sections they may have visited.

Trace outline of United States, and fill up the map as the study proceeds. Commerce of United States.

b. Then the following sections, using same topics: New England (if not taken); Middle States; Atlantic States; Gulf States. One section moulded.

c. Some of the following representative States: Massachusetts, New York, Pennsylvania, Florida, Texas.

d. Mathematical geography can be begun here. Form, size, motions; zones, parallels, meridians. (Illustrated, talked about, and drawn.) Latitude, longitude, circles, etc., weather, climate, vegetable and animal life.

e. Review the work of previous classes.

II. Talking and Reading.

Talking. — (Any omitted subjects given in previous class.) Boston, trade, wealth, money; roads, stage-coaches, street-railroads, canals, railroads. More practice on map-reading.

Occupations in eastern and southern parts of United States made prominent: as, —

Mining for coal and iron in Pennsylvania; cotton-raising, cotton manufacturing; fishing for cod, for whales; other manufacturing (especially any in the vicinity). Show how occupations are influenced by climate, surface, etc.

Air, — necessary to life; in motion (wind). Moisture in the air, — clouds, rain, dew (familiar illustrations).

Prominent cities in eastern and southern part; as New York, Philadelphia, Washington, New Orleans. Government and religion.

READING to the class as time permits: *The Sunny South*, Ingraham; *Wild Life in Florida*, Townshend; *Eastward Ho! Rangeley Lakes*, Farrar; *A Trip Eastward*, E. Abbott; *A Summer Cruise; Adrift in the Ice Fields*, Hall; *Cast Away in the Cold*, Hayes; *Coal* by Greene.

HISTORY. — The more interesting and vital topics of the United States history should now be *read* from some good text-book, such as Barnes's, Scudder's, Johnson's, or Higginson's.

III. Helps.

(*See Same in Fifth Class.*)

Lantern slides shown by the stereopticon or solar camera are of the greatest help to the children. The stereograph is a recent invention. Outline map on blackboard cloth; review charts; physical charts; scrap-book.

OBJECTS. — Iron from Pennsylvania; soft, hard, and iridescent coal; silver ore from New Hampshire or Massachusetts; granite from Concord, Cape Ann, Quincy; sandstone from Portland, Connecticut; coral and sponges from Florida; cotton-plant from the South, etc.

PRACTICAL SUGGESTIONS

There is no greater waste of time than in studying each State separately, as it must be printed in the text-books. The topical method obviates all this loss of time and energy, by collating and comparing facts. For example, instead of teaching what are the productions of each separate State, the topical method tries to lead the child to

learn where are the noted corn, wheat, rice, cotton, and sugar tracts or sections. Questions should be used with the topical method.

What railroad leads from your town across the country? What are the four largest trunk lines in your vicinity? What kind of business does each one do? Where is the nearest port?

What are the leading industries of your town, State, section? A class at this stage of geographical study should be ready to answer hundreds of just such practical questions.

In some towns, teachers have spent much time upon locality in Asia or Greenland, and neglected the places near home. Home locality should be carefully studied. Children ought to know all the towns lying about the home town for a radius of ten or more miles.

Do not neglect the progressive map as a means of aiding the memory. Remember the reviews. A review chart will create much interest, and save time and strength. The largest blackboard in the room may be divided into six or more columns, and each column headed by some important topic, such as surface, drainage, climate, the people, etc. Then the pupils are called to write by single words facts learned during the study.

See that the children understand such geographical terms as flood plain, estuary, delta, fiord, ford, channel, canal, butte, mesa, foot-hill, divide, pass, gorge, cañon, range, plantation, lock, current, etc.

The putty necessary to make a large raised map costs from five to ten cents. Putty can now be purchased of almost any color, and kept moist by the addition of a little oil.

In all attempts to trace, use the best tracing-paper procurable; but if the regular quality is not easily obtained, or

is too costly, thin manilla paper will make a good substitute. A practical scrap-book can be made at any time, with little labor or cost, by cutting out every other leaf from some large book, like an old disused " record-book of attendance."

CHAPTER XII

FIVE YEARS' COURSE OF STUDY, Concluded

No drearier task can be set for the worst of criminals than that of studying a set of geographical text-books such as the children in our schools are doomed to use. Pages of "tables," — "tables" of heights, and "tables" of areas; "tables" of mountains, and "tables" of tablelands; "tables" of numerals, which look like arithmetical problems, but are really statements of population: these, arranged in an alphabetical order, or disorder, form the only breaks in a chaotic mass of what are amusingly styled "geographical" facts, but which turn out to be simply names, — names of rivers, and names of hills; names of countries, and names of towns. Books such as these are simply appeals to memory; they are handbooks of mnemonics, instead of handbooks of geography. — *Professor J. R. Green, England.*

BOOKS FOR CONSULTATION

[Consult the list of books given at beginning of Chapter XI.]

CHAPTER XII

FIVE YEARS' COURSE OF STUDY, Concluded

FOURTH YEAR OF STUDY

I. Study.

NORTH AMERICA and Europe: Central States, Pacific States, Territories.

Representative States and Territories: Illinois, California, Colorado, Alaska. Study of relief by observation.

United States reviewed as a whole. Physical geography.

Study from the following topics or No. II., p. 46 : —

- **1. Position, etc.**
  1. Hemispheres.
  2. Zone.
  3. Shape.
  4. Comparative size.
  5. Progressive map, diagram and outline.
- **2. Surface**
  1. Highlands.
     1. Mountain Systems.
        1. Ranges.
        2. Peaks.
        3. Heights.
        4. Volcanoes.
     2. Plateaus.
  2. Lowlands.
  3. Draw Profile.
- **3. Drainage.**
  1. Water Partings.
  2. Lakes.
  3. River Systems.
- **4. Climate.**
- **5. Political Divisions.**
  1. Named in order.
  2. Capitals.
  3. Principal Towns (only a few).
- **6. Natural Divisions** (very few).

7. Life
   1. Vegetable.
   2. Animal.
   3. Human.
      1. Races.
      2. Population
      3. Occupation.
      4. Manners and Customs.
      5. Education.
      6. Religion.
      7. Government.
      8. Commerce.
8. Productions.
9. Exports and Imports.
10. Journeys.
11. Comparisons throughout.

Or, if you prefer, from Schedules Nos. 1 or 2, on p. 46.

Memory-maps of North America and Europe. Comparisons should henceforth be made prominent.

HISTORY. — Discoveries, settlements, colonial wars, disagreements of the Colonies and England, causes of the Revolution.

II. Talking and Reading.

TALKING. — Canals. Light-houses. The sea. Gulf Stream.

Commerce between America and Europe. Domestic commerce. (See King's and Dodge's Advanced Geographies and Redway's Commercial Geography.)

Occupations of the West, as gold, silver, and copper mining; grazing, wheat-growing, lumbering, irrigation.

Places noted for natural scenery.

Colonization, immigration.

Reason for locality of cities.

Prominent cities in the West, — Chicago, St. Louis, Denver, San Francisco, Portland, etc.

Prominent cities in Europe, — London, Paris, Rome, Venice, St. Petersburg, Berlin, etc.

Topics omitted in previous classes.

Reading to the class as time permits: *Alaska*, Heilprin; *Knocking Round the Rockies*, Ingersoll; *Among the*

English Hedgerows; The Open Polar Sea, Hayes; *Arctic Explorations*, Kane; *Mexico of To-day*, Griffin; *Three Vassar Girls Abroad*, Mrs. Champney; *Bodley Grandchildren in Holland*, Scudder; *Hans Brinker*, Dodge; *Fred Markham in Russia*, Kingston; *Young Folks Abroad.*

III. Helps.

Wall maps, globes, Underwood and Underwood, stereographs, New York. Frye's raised maps, physical charts, printed schedule of topics, drawing-paper, outline-maps on blackboard cloth, review charts, projecting reflectoscope, etc.

Objects. — Products of the sea such as shells, coral, whalebone, whale's tooth, sea-weed, sponges, star-fishes, mollusks, etc.

Gold, silver, lead, and copper ores; minerals; wheat; specimens of wood; bark of the big trees, etc.

Sealskin and other furs.

Manufactured articles from various parts of Europe brought by pupils.

Pictures. — Canals, light-houses, marine plants, fishes, different kinds of ships.

Gold, copper, and silver mining (King's, p. 150; Carpenter's, p. 241).

Grazing (McNally's, p. 64); farming in the West (Swinton's, King's, and Dodge's); Yosemite (Carpenter's, p. 272); Cañon (Guyot's New Intermediate, p. 50; Dodge's, p. 117); Yellowstone (Tarr's, p. 308; King's Elem., p. 140); Estes Park ("Rocky Mountains," Miss Bird).

Stereoscopic pictures of Europe, and such pictures as are found in Harper's, Dodge's, Frye's, Roddy's, Redway's, King's, Tarbell's, and Morton's geographies, and in all juvenile and most adult books of travel referring to Europe.

BOOKS FOR CONSULTATION. — *Alaska*, Dall; *California*, Nordhoff; *Greenland*, Professor Rink; *Over the "Great Ice,"* Peary; *The Polar World*, Hartwig; *Upper Yellowstone*, Wyndham; *Old Mexico and Her Lost Provinces*, Bishop; *Walks in London*, Hare; *Notes on England*, Mrs. Hawthorne; *English Traits*, Emerson; *England Within and Without; Holland*, Jungman; *Home Life in Germany*, Brace; *Italian Journeys*, Howells; *Walks in Rome*, Hare; *Russia*, Wallace; *Land of the Midnight Sun*, Du Chaillu; *Seven Spanish Cities, and the Way to Them*, Hale; *Scrambles among the Alps*, Whymper; *Commercial Geography*, Redway; *Ocean Wonders*, Damon; *The Ocean*, Reclus, Hartwig, and Figuier; *Half-Hours Underground; Physical Geography*, Tarr; *Mining West of the Rocky Mountains*, Raymond; *Our European Neighbors*, several vols.

Apgar's system of map-drawing, from its simplicity and direct help in drawing outlines, is superior to any thus far examined. (See Swinton's and Warren's Geographies.)

The books given under "II. Talking and Reading" are especially adapted for reading to the class, either by teacher or pupil. Those under "Reading for Consultation" contain valuable information upon the subjects to be taught. They are not so popular as the first-named, and yet many of them are well adapted to the more mature pupils.

Teachers must not expect too much of their pupils in mathematical geography. The subject is difficult for adult minds to comprehend. Every part here must be explained and illustrated over and over again. Only simple facts should be taught, leaving scientific facts for the first class.

A large number of subjects are given in "II. Talking and Reading," in order that teachers may select what seem

appropriate for their classes. Probably few teachers will find time to teach them all. Many of these subjects can be taught in connection with the study of the country related thereto; as, for instance, the best time to speak about mining for coal is in the lessons for the Middle States.

Outline-maps drawn in oil upon blackboard cloth are invaluable helps to teaching in all classes. The cloth, all mounted, in different sizes and at different prices, from $1 to $2, may be obtained of the J. L. Hammett Co., 250 Devonshire Street, Boston, Mass.

PRACTICAL SUGGESTIONS

The above schedule of topics can easily be modified to suit individual circumstances.

Commerce is worthy of considerable attention, and might be enlarged upon under the following subdivisions: —

- 1. Domestic
  - *a.* Receipts. — What? / Whence?
  - *b.* Shipments. — What? / Whither?
- 2. Foreign
  - *a.* Imports. — What? / Whence?
  - *b.* Exports. — What? / Whither?
- 3. How carried on — By land. / By water.

When Europe is studied, comparisons should be frequently made under each topic; e.g., under *population*, consider the density of Belgium, six hundred and eighty-one to the square mile, with that of Massachusetts, three hundred and eighty-one to the square mile. Consider the size of London, six

millions, with that of Pennsylvania, six millions. Consider the increase in the United States during the last twenty years, of fifty per cent, compared with that of Great Britain in the same period, of twenty per cent. Remember the United States now manufacture more in value in a year than Great Britain. Comparisons of this nature should not be carried so far as to become tedious.

One country should, during the year, be neatly written out in a blank-book by each member of the class. These books should be repeatedly examined by the teacher, and carefully criticised in reference to neatness, exactness, and completeness. This blank-book will be valuable in proportion to the amount of work done in it by the pupil rather than the teacher.

A teacher can make good colored inks for his class by purchasing five-cents' worth of aniline dyes at the nearest drug store, and mixing with water.

FIFTH YEAR OF STUDY

I. Study.

South America, Africa, and Asia, by full schedule of topics.

As time permits, study details of one or more countries, as Brazil in South America, Egypt in Africa, China, India and Japan in Asia.

Progressive maps of the grand divisions in advance, begun with the study of the outline, and continued as the study progresses. Comparisons should be constantly made between the natural features, climate, manners, and customs, etc., of the country under consideration, and other countries already studied in this or previous classes.

Work of third class reviewed as far as possible, especially North America and Europe.

Memory-maps of South America, Africa and Asia. (See physical maps in King's, Frye's, Redway's, Harper's; and commercial map in Dodge's.) Mountain ranges, rivers, natural divisions, etc., learned in same order; as, Obi, Yenisei, Lena, Amoor, Hoang Ho, Yangtse-Kiang, etc.

History. — The conflict between the English and French. The union of the English Colonies. The war for independence. Growth of slavery.

II. Talking and Reading.

Talking. — Drainage, glaciers, icebergs, ocean-currents. Forms of water.

Causes affecting climate.

Our wants, — food, clothing, shelter.

Vegetation (see Peavy's *Manual of Georgraphy*, pp. 38 and 68).

Races, forms of government, religion (taught more fully than in Class Four).

Proofs of the form of the earth; size, latitude and longitude, meridians, parallels, great and small circles, equator, poles, prime meridian, standard time, variation in length of degrees of longitude, zenith, nadir.

Motions of the earth; effect of the same. (See Miss Crocker's Notes, p. 24.)

Prominent cities in South America, — Rio Janeiro, Buenos Ayres, Valparaiso, Quito.

In Africa, — Cairo, Cape Town, Algiers.

In Asia, — Peking, Canton, Tokio, Calcutta, Jerusalem.

Reading to the class as time permits:

South America, Carpenter; *Climbing the Andes*, Conway; *On the Banks of the Amazon*, Kingston; *The Naturalists on the Amazon*, Bates; *Brazil and the Brazilians*, Fletcher; *Through Five Republics*, Martin; *Great Thirst Land*, Gillmore; *Boy Travellers*, Knox (5 vols.); *Present Day Egypt*, Penfield; *Rip Van Winkle's Travels in Asia and Africa*, Van Wert; *Child Life in Japan*, Ayrton; *The Wonderful City of Tokio*, Greey; *Our Boys in India*, French; *Our Young Folks in Africa*, McCabe; *China, Japan, India*, Eden; *Rob Roy on the Jordan*, McGregor; *Land of the White Elephant*, Vincent; *Rifle and Hound in Ceylon*, Baker.

III. Helps.

(*See Third Class.*)

Blackboard globe; outline-maps of each grand division on blackboard cloth; printed schedules of topics for the pupils, review charts, etc. Reynolds's physical and astronomical charts.

Objects. — Caoutchouc, cinchona bark, tapioca, cocoa from Para, coffee-berry, coffee, dye-woods, Brazil-nuts from Brazil, etc. Lima beans, native woods, cochineal, cocoa, vanilla-beanpod, vegetable wax, etc., from South America.

Olives, dates, ebony, ostrich-feathers, ivory, indigo, acacia, red pepper, cloves, gum-arabic, etc., from Africa.

Raw silk, opium, jute, indigo, gutta-percha, camphor, gamboge, tamarinds, bamboo, tea, palm-wood, olive-wood, joss-sticks, chop-sticks, fans, boxes, Chinese and Japanese ornamental work, etc., from Asia.

(Many of these and other objects will be brought by the pupils, if encouraged by the teacher.)

Pictures. — Helpful pictures will be found in *Guyot's*

Physical Geography, pp. 47, 48, 53, 56, 58, 93, 94; in most geographies, especially Frye's, Dodge's, King's, Redway's, Tarr's, Roddy's, Tarbell's.

Egypt (Land of the Pharaohs), *Boy Travellers*, No. 4; People of Africa (Uncivilized Races, Wood; Baker's, Stanley's, and Livingstone's works); Africa (McCabe, Vincent; Stanford's Compendium, Africa).

Peru and Amazon (Marcoy's); Peru (Squier).

Brazil (Agassiz and Smith).

Northern Coast of Asia (*Voyage of the Vega*).

China (Thomson and Eden); *Siberia*, Bookwalter.

Japan (Gardner's *As We Saw it*, and Morse's books); India (Conway's *Climbing the Himalayas*, French and Eden).

Cocoa-nut palms, grand pagoda, fakirs, howdahs, shops, Taj Mahal, and many cities, etc., in *Indian Pictures*.

Asia, general (Stanford's *Compendium of Geography*, — Asia; Prime's *Around the World; Wanderings in Four Continents*).

Books for Consultation. — *South America*, Marcoy; *Brazil*, Smith; *Across Patagonia*, Dixie; *Peru*, Squier; *A Thousand Miles up the Nile*, Edwards; *South Africa*, Bryce; *Modern Egyptians*, Lane; *Across Africa*, Cameron; *Through the Dark Continent*, Stanley; *From the Cape to Cairo*, Grogan; *The Heart of Africa*, Schweinfurth; *Boat Life in Egypt and Nubia*, Prime; *Arabia*, Palgrave, Taylor; *Japan*, Bird; *Ten Years' Travels*, Thomson; *Land of the Veda*, Butler; *Indian Alps*, Lady Pioneer; *Voyage of the Vega*, Nordenskjöld; *Siberia*, Shoemaker; *Through Persia by Caravan*, Arnold; *Around and About South America*, Vincent; Hedin's *Central Asia*, etc.

Practical Suggestions.

It is better for the pupils to read to the class than for the teacher. The appointment of a "reading-hour" will help to carry into practice this idea. If there is a public library accessible, then the teacher should help the pupils in finding the best books on each country. One of the most practical ways of doing this is to give them the library numbers for the books. There are now plenty of good and very interesting books on the above grand divisions. Most of these books are beautifully illustrated.

If the teacher will appoint some day in the course of the study of a country like Asia, when articles from that country are requested to be brought for a *loan collection*, she will be surprised at the results and the interest. The writer has known over three hundred different articles brought by a single class to illustrate a grand division, ranging from a five-cent Japan fan up to a three-hundred-dollar India shawl.

In some of the large cities, illustrated papers, with privilege of selection, are sold for five cents each, which contain several good pictures for school purposes. Sometimes a single magazine will have scores of good available illustrations. See *Harper's Magazine*, *Century* and *Scribner's Magazines*, and *The World's Work*.

FIFTH YEAR OF STUDY (Concluded)

I. Study.

Oceanica, West Indies, Mexico, Canada, and Greenland, Hawaiian Islands and the Philippines, by selected topics.

Review the grand divisions by full schedule of topics. In this review, progressive maps of the grand divisions should be made prominent.

Comparisons and classifications should be constantly required. (See *Harper's Geography*, note, p. 75; and Guyot's Geographies.)

As far as possible, study the world as a whole, making general comparisons of the different countries in reference to physical features, political conditions, productions, manufactures, manners and customs, commercial relations, etc.

Let the pupil study the kind, locality, and extent of the mining industries of each grand division; railroads, education, condition of women, etc.

As time permits, study topically such representative *countries* of the world as United States, Brazil, England, France, Germany, Italy, Russia, China, Japan, India, Egypt.

Such representative *cities* of the world as New York, Boston, London, Paris, Venice, Rome, Pekin, Tokio, Benares, Cairo, Rio Janeiro, Batavia, etc.

Motions of the earth. Apparent motions of the sun. Changes of the seasons. Variation in the length of day and night. "Standard Time." Observations in reference to all these subjects.

Constant, periodical, and variable winds. Ocean currents, polar and equatorial. Return currents, — Gulf Stream, Japan Current.

Forms of water, — invisible vapor, rain, fog, glaciers, icebergs, rivers, etc.

Coral islands, volcanoes, earthquakes, etc.

History. — Review history previously studied. Administrations. War with Mexico. Civil war. Reconstruction.

II. Talking and Reading.

TALKING. — Commercial trip round the world.

Pleasure-trip round the world. Places visited for scenery; for health.

Manners and customs of the Chinese, Japanese, Hindoos, Negroes, Indians, Esquimaux, French, Germans, Spanish, etc.

Education in England, France, Germany, Spain, Sweden, Russia, China, Japan, India, etc.

Noted buildings in the world, such as Taj Mahal in Acra, India; Pyramids in Egypt; St. Peter's in Rome; Notre Dame in Paris; Parliament Houses in London; cathedrals in Milan, Cologne, Salisbury, etc.; Capitol in Washington, etc.

Talks about, and reviews of, books of travel read by pupils.

Railroad routes, railroad centres, steamship routes.

Foreign and domestic commerce, etc.

Prominent cities in the advance: In Oceanica, — Auckland, Batavia, Honolulu, Manilla, Melbourne, Sydney, and Wellington.

In West Indies, — Havana, St. Domingo, Porto Rico.

In Mexico, — Mexico, Vera Cruz.

In Canada, — Montreal, Ottawa, Quebec.

In Greenland, — Lichtenfels.

READING to the class, or by the class, as time permits: *Voyage of the Yacht Sunbeam*, Brassey; *Boys of Other Countries*, Taylor; *Round the World by a Boy*, Smiles; *Australia*, Eden; *At Home in Fiji*, Cumming; *Through and Through the Tropics*, Vincent; *Island Life*, Wallace; *Adventures of the Young Naturalist*, Gillmore; *Camps in*

the Caribbees, Ober; *A Geographical Reader*, Johonnot; *Around the World*, Prime; *Island of Fire* (Iceland), Headley; *Arctic Adventures*, Sargent; physical geographies, — Guyot, Dryer, Davis, Tarr, etc.; *The Subterranean World*, *Aërial World*, *Polar World*, Hartwig; *The Bottom of the Sea*, Sonrel; *Countries of the World*, Brown; *Ocean Wonders*, Damon; *Ice-Pack and Tundra*, Gilder, etc.

III. Helps.

(*See Previous Classes.*)

Globes of various kinds, such as hemisphere globes, blackboard globes, large and small globes, magnetic globes, Joslin's "Solar Telluric Globe" (globe mounted at an angle of forty-one and one-half degrees). Maps of every variety, such as simple outline-maps of the grand divisions, drawn on one piece of manilla paper, upon same scale, to show comparative size; outline-maps of the grand divisions on blackboard cloth; Guyot's large physical maps; same, small size, on cardboard; Warren's physical maps, with Apgar's method of map-drawing; Hughes's political maps; Sonnenschein and Allen's atlas, containing thirty-one raised maps; Frye's relief maps.

Reynolds's physical and astronomical charts; review charts, chart giving comparative heights of mountains; picture album, scrap-book; printed schedules of topics; enamelled colored crayons; two picture-frames, large and small, with movable board for showing pictures to pupils. School solar camera. Stereopticon run by electricity or gas.

Objects. — Coral, jute, manilla-hemp, pumice-stone, sandal-wood, shells, spices, etc., from Oceanica.

Banana, citron, cocoa-nut, hard woods, ginger, lemons, logwood, pineapple, sugar-cane, tamarinds, etc., from the West Indies.

Cochineal, jalap, mahogany, quicksilver, sarsaparilla, vanilla, etc., from Mexico.

Cannel-coal, codfish, gypsum, various woods, etc., from Canada.

Cryolite, eider-down, seal's skin, spermaceti, whalebone, whale's tooth, etc., from Greenland.

Alum, brass, cinnabar, coal, cocoa-nut and husk, coke, coral, cotton-plant, flint, furs, glue, graphite, hops, leather, brimstone, marble, mica, mercury, nickel; ores such as copper, gold, iron, lead, silver, zinc; parchment, pewter, quartz, rice, rock-salt, sandstone, slate, soda, sponges, starch, sugar, vellum, woods, wool, various kinds of manufactured articles from the vicinity of the school, etc., — to represent North America.

Allspice, Brazilian diamonds, Brazil-nuts, caoutchouc, cloves, coffee-berry, cocoa-nut, indigo, Lima bean, mahogany, palm-nuts, tapioca, vanilla-bean, vegetable-ivory-nut, etc., to represent South America.

Cloves, dates, ebony, gums, ivory, olives, ostrich-feathers, red-pepper, spices, etc., to represent Africa.

Assafœtida, attar of roses, bamboo, Chinese book, chopsticks, camel's-hair scarf or shawl, camphor, dates, fans, ginger-root, gum-arabic, gutta-percha, idols, India-ink, lac, lacquered ware, malachite, Mocha coffee, manilla-hemp, musk-sac, opium, olive-wood, porcelain, platinum, preserved ginger, raw silk, rice-paper, rhubarb, sago, sandal-wood, shellac, tea, teak-wood, tortoise-shell, etc., to represent Asia.

Agate, alabaster, amber, borax, chalk, citron, coral, cork,

eider-down, emery, ermine, hemp, lapis lazuli, lava, lemons, licorice, limes, linen, macaroni, madder, model of Swiss cottage, mosaics, nutgalls, opal, oranges, otter, prunes, raisins, sable, sponges, sulphur, tin, topaz, toys, Venetian glass, various kinds of manufactured articles, etc., to represent Europe.

(Pupils, after a little encouragement, will bring to the school a large proportion of these articles as a "loan collection." Most of the articles named above, and many others, have been thus exhibited by the different classes in the Lewis School in a single year.)

PICTURES. — (See previous classes.)

Helpful pictures will be found in all the geographies; in Harper's publications of travel; in *Harper's Magazine* and *Weekly;* in *The Century, Scribner's* and *World's Work.*

For pictures of Oceanica, see *New Guinea* by D'Albertis; *New Zealand,* by Taine; *The Malay Archipelago,* by Wallace; *Australia,* Carpenter; etc.

Mexico: See *Mexico To-day,* by Brocklehurst; *Old Mexico,* by Bishop; *Summerland Sketches,* by Oswald; etc.

West Indies: See *Santo Domingo,* by Hazard; *Camps in the Caribbees,* by Ober; *Cuba,* by Hill.

Greenland: See Rink's book on *Greenland; The Countries of the World,* Brown, Vol. I.

In addition to books above: North America, — See *Picturesque America; America Illustrated,* by Williams; *The Great South,* by Ed. King; *The White Hills,* by Thomas Starr King; *Arctic Researches,* by Hall; *Polar Reconnaissance,* by Markham; *History of the Northern Pacific Railroad,* by Smalley; *Arctic Explorations,* by Peary; *Alaska,* by Whymper; *The Pacific Coast,* by Finck, etc.

South America: See *South America*, by Marcoy, 2 vols.; *Brazil*, by Fletcher, by Smith, by Agassiz; *Peru*, by Squier; *Venezuela*, by Paez; *South America*, by Carpenter, by Vincent, etc.

Africa: See *Land of the Pharaohs*, by Manning; *Pyramids, Temples, and Tombs*, by Belzoni; *Thebes*, by Abney; *Nile Gleanings*, by Stuart; *Family Flight Through Egypt and Syria*, by Hale; *Algeria*, by Herbert; *Our Young Folks in Africa*, by McCabe; *The Great Rift Country*, by Gregory; all of Baker's and Stanley's works, etc.

Asia: See *Little People of Asia*, by Miller; *China and its People*, by Thomson; *Indian Alps*, by a Lady Pioneer; *Indian Pictures*, Urwick; *Pathways of Palestine*, by Triestram; *Chinese Characteristics*, Smith; *India and its Native Princes*, by Rousselet; *Japan and the Japanese*, by Humbert; *Through Siberia*, by Lansdell; *Voyage of the Jeannette*, by Mrs. DeLong; *The Voyage of the Vega*, by Nordenskjöld, etc.

Europe: *Land of the Midnight Sun*, Du Chaillu; *In the East*, Mrs. Brassey; *Scrambles among the Alps*, Whymper; *English Pictures*, Manning; *French Pictures*, Green; Italian *Pictures*, Manning; *Spanish Pictures*, Manning; *Spain*, Davillier; *Swiss Pictures*, Manning; *Spanish Vistas*, Lathrop; *Spain*, Wood; *Pyrenees*, Doré; *Scottish Pictures*, Manning; *Land of Lorne*, *Through Cyprus*, Thomson; *Rome*, Hall, Taine, Wey, Clement.

For the world in general: See *Le Tour du Monde*.

Books for Consultation. — *Schwatka's Search*, Gilder; *High Latitudes*, Lord Dufferin; *Notes on the Northern Atlantic*, Brown; *Hindoos as They are*, Bose; *Pen Pictures of Europe*, Peakes; *South Africa* (1899), Bryce; *Travels round the World*, Coffin, Seward; *Malay Archipelago*, Wallace; *Andes and Amazon*, Orton; *Voyage of Challenger*,

Thomson; *Nile Gleanings*, Stuart; *On the Desert*, Field; *Corea*, Hulbert; *East of the Jordan*, Merrill; *Turkestan*, Schuyler; *Across America and Asia*, Pumpelly; *A Flight to Mexico*, Aubertin; *Explorations and Discoveries*, Jones; *The Indian Empire*, Hunter; *Cuba*, R. D. Hill; *The West*, 1880, Porter; *Due West*, Ballou; *Wild Tribes of the Soudan*, James; *Methods of Teaching Geography*, Professor McMurry; *Comparative Geography*, Ritter; *Physiography*, Huxley; *Forms of Water*, Tyndall; *Man and Nature*, Marsh; *The Ocean, Tides, Currents*, Jordan; *Uncivilized Races*, Wood; *Commercial Products of the Sea*, Simmonds; *The Surface Zones of the Globe*, Johnston; *The Earth*, Reclus; *Compendium of Geography and Travel* (6 vols.), Stanford; *The Geographical Magazine*, published in Washington; *Journal of Geography*, Dodge; *Reports of the Royal Geographical Society and of the Smithsonian Institute.*

A more complete list of books will be found in Chap. XX.

PRACTICAL SUGGESTIONS

The progressive map in this class should be made entirely with ink. Do not allow the class to do *careless* work; at the same time do not spend too much time on perfection of outline, or on shading the mountains or coast-line, so as to resemble too exactly the book. The printed outlines published by Heath & Co., Boston, save to this class much time, and should be used freely.

Allow this class to use colored inks; red for the productions, blue for the animals, etc. By means of arrows, lines, and various marks, indicate upon these progressive maps the prevailing winds, currents, countries, east and west, important parallels and meridians, time, voyages, etc.

In this class certainly, if not earlier in the course, a cabinet should be begun to illustrate geography. If the first season only six specimens are brought together to illustrate each grand division, a good and encouraging commencement has been made. These six, carefully kept till the next class appears, will soon multiply to twenty-five apiece. In several schools in and near Boston, valuable collections have grown out of such small beginnings.

Comparisons should frequently be called for in this review recitation work. Children of this age are delighted with them. They should be made in a variety of ways, and between not only countries, but rivers, mountains, people, and climates; as, for example,

Chinese Women.	American Women.
Small in size.	Medium size.
Deformed feet.	Natural feet.
Never educated.	Usually educated.
Kept in seclusion.	Allowed to go into public.
Looked upon as slaves.	Looked upon as helpmeets.
Daughters are considered burdens, and of little value.	Daughters treated just the same as sons.
Have to work very hard.	Have hard work done for them.
Wear trousers like the men, etc.	Wear skirts and dresses, etc.

CHAPTER XIII

WHAT TO TEACH ON NORTH AMERICA

THE simplicity and the grandeur of North America, the extent of the spaces over which it rules, seem to have prepared it to become the abode of the most vast and powerful association of men that has ever existed on the surface of the globe. — *A. Guyot.*

To understand this simple grandeur is not an extravagance, but a matter-of-fact duty. — *The Author.*

AMERICA is another name for Opportunity. Our whole history appears like a last effort of the Divine Providence in behalf of the human race. — *Emerson.*

BOOKS FOR CONSULTATION

Bird's Life in the Rocky Mountains.
Boddam-Whetham's Western Wanderings.
Bishop's Four Months in a Sneak-Box.
Bishop's Voyage of Paper Canoe.
Canadian Pictures.
Canada in the Twentieth Century.
Cook's Eastern Tour.
Dall's Alaska.
Freeman's Impressions of America.
Greene's American Forestry.
Green's Among the Selkirks.
Hill's Cuba.
Heart of the Alleghanies.
Hubbard's Maine.
Ingersoll's Knocking 'Round the Rockies.
King's White Hills.
Lawson's Coast-lines.
Leighton's Life at Puget Sound.
Marshall's Through America.
Pierrepont's Fifth Avenue to Alaska.
Powell's Reports.
Stanford's Compendium of North America.
Stanley's Yellowstone.
Waraman's Trip to Alaska.
Webb's California and Alaska.
Westgate's Yellowstone Park.
Russell's North America.

CHAPTER XIII

WHAT TO TEACH ON NORTH AMERICA

DIRECTIONS — BRIEF HISTORY — POSITION — SIZE — A TRIP AROUND THE COAST — SURFACE — DIVISIONS — ROCKY MOUNTAINS — ATLANTIC HIGHLANDS — "ON HORSEBACK" — MOUNTAINS OF NORTH CAROLINA — COMPARISONS — PLAINS — DRAINAGE — NAMES OF RIVERS — SYSTEMS — THE GREAT LAKES — DESCRIPTION OF FOUR RIVERS — MISSISSIPPI — ST. LAWRENCE — COMPARISONS — COLUMBIA RIVER — COLORADO — ON THE FRAZER

[**Directions to the teacher.** — The matter published in this and the two following chapters has been given to several classes, by about one hour's work each day for five or six weeks, and these classes examined at the end of the time. The average of the examination has varied from eighty to eighty-seven per cent. The reason so long a time has been taken, is because each year this happened to be the continent taken up *first* by the topical method; and the class wrote out the matter, as we proceeded, in large blank-books. In the topical method very little time is given directly to location and names. These are thoroughly learned by association. About half of what is here given on North America will be acquired with sufficient accuracy by reading or telling to the class once or twice. The parts which may be appropriately read are indicated by smaller type. The third schedule of topics is here followed. See p. 48.]

I. BRIEF HISTORY[1]

THE *New World* was discovered in 1492, at San Salvador, by Columbus, an Italian, sailing under the Spanish flag; but it was named after his friend, Amerigo Vespucci.

The *Continent* of North America was first discovered at Labrador, by an Englishman, named John Cabot.

De Soto was the first to discover the Mississippi River; Cartier, the St. Lawrence; and Balboa, the Pacific Ocean.

The *Red Man* owned and occupied the whole country

[1] Nos. I. and II. may be dictated to the pupils, or written on the board. In younger classes I. and II. should be taken up at the end of North America.

when these discoveries were made. These Indians were divided into two classes, — those of the North, and those of the South. The Southern Indians, occupying Mexico and Central America, were highly civilized, and entirely different from the Indians who lived in the present limits of the United States. History affords no sadder story, than the record of their cruel conquest by Cortez.

Gradually the Spaniards settled in the southern part of the new country; the English along the Atlantic Coast; the French about the St. Lawrence, the Lakes, and the Upper Mississippi.

Each claimed land indefinitely from their settlements, hence their claims overlapped. The Spanish nation decreased in power, and soon only occupied St. Augustine and Santa Fé.

The French and English increased in numbers and wealth. They quarrelled about the land; war was declared; the English were victorious, driving out the French, and getting possession of all the land east of the Mississippi, excepting Florida.

Then came — 1775 — the Revolution, and, later, independence, and the establishment of the Republic of the United States. Eighty years of growth and prosperity followed. Then came the secession of the Slave States, and the civil war, which destroyed slavery, and restored the Union. The three heroes of this history are Washington, Lincoln, and Grant.

II. STRIKING CHARACTERISTICS

North America is the *larger* grand division in the Western Hemisphere. It is a *new* country. It is the land of *plains*, in contrast to the continents of the Eastern Hemisphere, which are the lands of *plateaus*.

North America is noted for its great fresh-water *lakes*, its extensive *rivers*, unsurpassed *falls*, *valleys*, *cañons*, *geysers*, great *prairies*, valuable *timber-land*, wide expanse of remarkable *fertility*, unlimited extent of its *grain-fields*, variety and abundance of its precious and useful *metals*, and the great area of its *coal-fields*.

It is also noted for its rapid growth in *population* and *wealth;* for surpassing all other countries in the extent of its *railroads* and *telegraphs;* for being first in the amount of its *manufactures* and *industrial products*.

In a still more remarkable degree it is noted for the harmonious commingling of so many widely *different nationalities;* as the land of *freedom* in *thought* and *speech; free schools*, *free press*, and perfect *religious* toleration.

III. POSITION

If a person looks down upon a globe placed on the floor, he sees the outlines of the grand divisions stretching away from the North Pole, arranged in three groups. In like manner, a person looking from a great height, as, for instance, the North Star, upon the earth, would see the land-masses grouped in three pairs, North and South America forming one of the pairs. (See globe.) The two grand divisions stretch from pole to pole (9,000 miles). North America lies opposite the great land-masses of the Old World.

[Consult the maps in your text-books, and learn in what *zones* and *hemispheres* it is, its direction from Europe, South America, etc.]

Most of the land in North America lies between the Tropic of Cancer and the Arctic Circle.

In ***Latitude*** North America extends from about 8° N., which is near the Isthmus of Panama, to Cape Washington,

84° N., the northern point of Greenland, which point was seen and nearly reached by Messrs. Lockwood and Brainard of Greely's expedition, 1882. (See *Three Years of Arctic Service*, vol. i. p. 335.)

In respect to ***Longitude*** North America extends from 14° W., found in the eastern point of Iceland, as far west as one can go, 180° W., and then turning east, to the most distant Aleutian Islands; almost half way round the world, if measured on the Arctic Circle.

[The longitudinal centre of the United States is said to be two hundred miles west of San Francisco. Can this be true, on account of the Aleutian Islands?]

[A progressive map of North America should now be commenced according to the directions given in chap. vii. To save time, and to help the pupils make a better-looking map, supply them with the cheap progressive outline-maps, published by Heath & Co., Boston.]

The ***shape*** of North America, as seen on the map, is triangular, like South America and Africa, the apex pointing southward; the widest part toward the north. It has greater diversity of form than the other triangular grand divisions. There are several inland and bordering seas. The mountain systems are more varied. All this makes it better fitted for the use of man.

Comparisons.

The Arctic and Atlantic coasts are nearly equal; each has one great, and many small, indentations: Hudson Bay on the north, Gulf of Mexico on the south, peninsulas of Alaska and California on the west, and Labrador and Florida on the east. The peninsula of Florida points south, and Yucatan points north.

Fig. 57.— The Grand Divisions drawn on the same Scale, to show Comparative Size.

[Make other similar comparisons.]

The coast-line of North America is the most irregular of the triangular grand divisions. Its numerous border-waters, great inland rivers, and fresh-water lakes, give it great commercial advantages over South America or Africa.

Size.

North America, as seen from the chart of comparative sizes, is third in extent of the grand divisions. It is larger than South America, more than twice as large as Europe, and more than half as large as Asia. (See Fig. 57 on next page.)

It is five thousand miles from north to south, and about three thousand miles in width on the 50th parallel. North America contains about eight million five hundred thousand square miles, which equals one-sixth of all the land in the world.

Alaska equals in size the United States east of the Mississippi River and north of Alabama. [This matter of size is easily remembered by writing the names of countries of equal size over the States and sections with which the comparison is made, as given in Fig. 22, p. 145.]

A Trip Around the Coast.[1]

(In Commodore B——'s private yacht.)

[Length of coastline of North America is 24,500 miles; of South America, 15,700 miles; of Africa, 16,200 miles.]

Eastern coast of Greenland is ice-bound and inaccessible.

Western coast of Greenland high, steep, rocky, islands, fjords, icebergs.

Hudson Bay contains many shoals and reefs. There is ice there a greater part of the year.

[1] The pupils should have their books open to the map of North America, and the teacher or a pupil write the facts on the blackboard.

Labrador is rocky and desolate.

Newfoundland contains deep bays and inlets like Scotland. The coast is often hidden by fogs.

Bay of Fundy, noted for its high tides.

Maine coast is high and rocky.

The northern part of the Atlantic coast is noted for good harbors, such as Portland, Boston, New York, etc.

Farther south: coast low, extensive swamps, poor harbors.

Carolinas have low coast, and low, sandy islands on which grow sea-island cotton.

Florida: low and sandy; navigation round about quite dangerous, owing to the numerous currents, banks, and coral reefs.

Mississippi delta: a low and unhealthy swamp, covered with reeds, and affording shelter to numerous alligators.

Texas is lined with long, narrow islands, which form many large bays and lagoons.

Mexico has a low, flat, and sandy coast, with no good harbors. The shore is unapproachable during the prevalence of Northers. The lofty mountains west of Vera Cruz are seen many leagues seaward.

Balize is skirted with coral rocks, on which cocoanut-trees grow in abundance.

Central America produces on her eastern shores tortoise-shell of the best quality: this part is usually called "Mosquito Coast." The western shores of Central America and Mexico are generally low, but diversified somewhat with spurs of the mountains running down towards the sea. Good harbors abound, Acapulco being one of the best.

California has a dangerous, rock-bound coast. The Coast Range is usually visible from vessels sailing north or south to, or from, the Golden Gate.

Alaska: southern part has rocky and bold shores, with high, snow-capped mountains visible; but north and east of Behring Strait the coast is low and swampy.

The interior of the United States is thus seen to be easily accessible to persons approaching from the Atlantic Ocean, but to be shut out from the Pacific Ocean. The country has always had its doors wide open, politically and physically, for immigrants.

IV. SURFACE

Both North and South America are the continents of *plains*. The Old World is the continent of mountains and plateaus. The plains occupy the greater and better part of North America. The general elevation of the plains is favorable to man. A large portion of the fertile soil lies between five hundred and fifteen hundred feet above sea-level.

[Surface shown by looking at the different *wall-maps* hanging about the room, or by the physical or relief maps in the text-books.]

In looking at any of these maps, it is easily seen that the mountain ranges run nearly north and south. In the Eastern Hemisphere they run — [Children look and tell.]

The ***Surface*** of North America is conveniently divided, for the purpose of study, into four parts: —

The Pacific Highlands,
The Central Plain,
The Atlantic Highlands,
The Atlantic Plain.

The highest and longest range of mountains is near the western coast. It is often called the *main axis*. [Look on the map, and learn its name.]

The next range in importance is near the eastern coast. [What name?]

The Central Plain, shaped like the inside of a trough or bath-tub, lies between the two highlands.

The Atlantic Plain, still farther east, is situated between what mountains and what ocean?

[From the various maps the teacher asks the pupils to learn the extent and direction of these different highlands and plains.]

THE HIGHLANDS, OR MOUNTAINS

The ***Pacific Highlands*** may be divided into an ***inner*** and an ***outer*** system. These, in turn, may be sub-divided into the

Inner.
- **Rocky Mountains,**
- **Rocky Mountain Plateau (a part of which is called the Great Basin),**
- **Mexican Plateau,**
- **Cascade Range,**
- **Sierra Navada.**

Outer.
- **Pacific Slope, called in California the Coast Range.**

These mountains are the eastern edge of a great *tableland*, varying in width from four hundred to nine hundred miles. [Pupils notice where widest.] The Rocky Mountains may be called the *Primary* Cordilleras. The *Secondary* Cordilleras westward consist of the outer system, extending northward, even to the peninusula of Alaska and the Aleutian Isles, which form a ring of stepping-stones between North America and Asia.

The *Rocky Mountains* contain many of the highest peaks in the country, such as Long's Peak, named after Col. Long,

who made an expedition to this section in 1819–20; Pike's Peak, a hundred miles south, named after Major Pike.

In the winter of 1803 Major Pike made an effort to reach the summit, but was obliged to turn back, sadly remarking, "Nothing but a bird could reach its snowy summit." Now ladies and children ride to the top on horseback or in a car upon the cog railroad. A man can climb the peak in six hours. Both of these peaks can be seen in a clear day from Denver.

At the foot of these mountains, in Colorado, are several beautiful basins, or very broad valleys, called in Western language *parcs*. The most beautiful, near Long's Peak, is called Estes Parc. [See picture and description in Miss Bird's book, *The Rocky Mountains*. For a complete description of these parcs, and the whole area of the Pacific Highlands, consult *Mission of the North-American People* by Gilpin, ex-governor of Colorado.]

[Read selections of Miss Bird's ascent of Long's Peak from her book, *Life in the Rocky Mountains*, p. 97, and Codman's ascent of Pike's Peak given in *The Round Trip*, p. 297, and Chapter 4, *King's Advanced Geography*.]

Along the 40th parallel, twenty-five peaks of this range exceed fourteen thousand feet in height. At the extreme ends of the range, rise still higher such peaks as the volcanoes of St. Elias on the north, in Alaska, and Popocatepetl, on the south (nearly three miles and a half above the level of the sea). The latter, meaning the *smoking mountain*, is constantly seen by the children in the City of Mexico, and called by them "Popo."

[For interesting accounts of ascents of this remarkable volcano, see *Adventures of Rob Roy* by J. Grout, published by the World Publishing House, p. 258; or, better, Ober's *Travels in Mexico*, p. 373. For good pictures, see King's Geography, p. 9.]

The ***Atlantic Highlands*** are far inferior in height, grandeur, and extent, to the Pacific Highlands.

Confronting the Rocky Mountains at a distance of some twelve hundred to fourteen hundred miles, these richly wooded ranges, often called when taken together "the Appalachian Range," form the eastern rim of the great basin of the Mississippi.

Beginning at the south, the most important ranges named in order are the following: —

1. Cumberland. 2. Alleghany. 3. Blue Ridge.
4. Catskill. 5. Adirondacks.
6. Taconic. 7. Hoosac.
8. Green. 9. White. 10. Mountains of Maine.
11. Wotchish in Canada.

[Examine map, learn location, and why the names were thus arranged in five lines in the above list.]

The Alleghany may be remembered for its rich iron and coal mines; the Blue Ridge, for the Natural Bridge (picture in Guyot's Common School, p. 111, and Maury's, p. 40); the Adirondacks, for the great number of small lakes lying among the mountains; the Hoosac, for its tunnel; the Green, for the beautiful sugar-maple so abundant in that region, and for the marble quarries; the White, for its grand mountain scenery, giving it the name of "the Alps of America."

Mount Washington is the highest among the White Mountains. [A mile and a quarter above the level of the sea. How many Washingtons to equal St. Elias?] But Mitchell's or Clingman's Peak in North Carolina is now known to be from three hundred to four hundred feet higher than Mount Washington. The railroad up the latter mountain carries

every summer, in perfect safety, thousands of travellers to the summit of this peak, on which stands a commodious hotel called the Summit House. Parties frequently leave Boston at 7 o'clock P.M., ride in a "sleeper," reach the top of Mount Washington early the next morning, spend several hours "among the clouds," and return to Boston in the afternoon and evening. From the town of Jefferson a splendid view of the high mountains on each side of Washington, called the "Presidential Range," is obtained. [See pictures in King's, Swinton's, and Warren's.]

Charles D. Warner in his article "On Horseback," in the August *Atlantic*, 1885, says in reference to the Roan Mountains, a part of the Black Mountains, in the north-western part of North Carolina: —

"The surface of Roan is uneven, and has no culminating peak like Mount Washington. The surface of the mountains is pebbly, but few rocks crop out; no ledges of any size are seen except at a distance from the hotel, and the mountains lack that savage, unsubduable aspect which the White Hills of New Hampshire have. It was difficult to realize that we were six thousand feet above the level of the sea. These mountains are tree-covered. They get the name Black from the balsams which cover the summits. The black balsam is neither a cheerful nor picturesque tree. The naked granite rocks in sun and shower are more cheerful; but, to many, this clothing of verdure is most restful and pleasing. The rock here is a sort of sand or pudding stone. There are none of the great gorges and awful abysses of the White Mountains, few precipices and jutting crags. Mica and iron are taken out."

Mountains of North Carolina. — Alleghany means "endless." The name Appalachian was first applied by De Soto. Fifty-seven peaks in the western part of North Carolina are over six thousand feet high. The Blue Ridge is the water-shed of this system in this

State, as not a river severs it. This statement is not true in reference to the same range of mountains in other States. [Tell the pupils to consult their map.]

According to most geologies, the mountains of North Carolina were the first to appear above the water, therefore the oldest; hence one of the high peaks of the Blue Ridge is called "The Grandfather."

On the top of Mitchell's Peak is the solitary grave of Professor Elisha Mitchell, piled round with stones, without further monument.

"The entire region is mantled with forests to the summit of every peak; the valleys and many of the adjacent coves are cleared, and inhabited by a happy, healthy, and hospitable people. It is rich in picturesque scenery, romantic rivers, luxuriant forests, majestic mountain heights, and valleys of exquisite beauty." — *Heart of the Alleghanies*, p. 12.

The comparative elevations of the eastern half of the United States are plainly indicated by a contour map such as is shown in Fig. 58.

Comparisons.

ROCKY MOUNTAINS.	APPALACHIAN.
Long.	Short.
Wide.	Narrow.
Continuous.	Broken.
Very high.	Less high.
18,000 feet.	6,000 feet (about $\frac{1}{3}$).
Plateaus and parks between.	Valleys between.
Snow twelve months.	Snow eight months.
Dry.	Moist.
Sharp, pointed, jagged tops.	Round, smooth tops.
Generally bare or snow-capped.	Usually forest-clothed.

Usefulness of American Mountains.

All are useful in condensing the moisture in the air, and in producing rain. In the West they are storehouses of the precious and useful metals (the Rocky Mountains

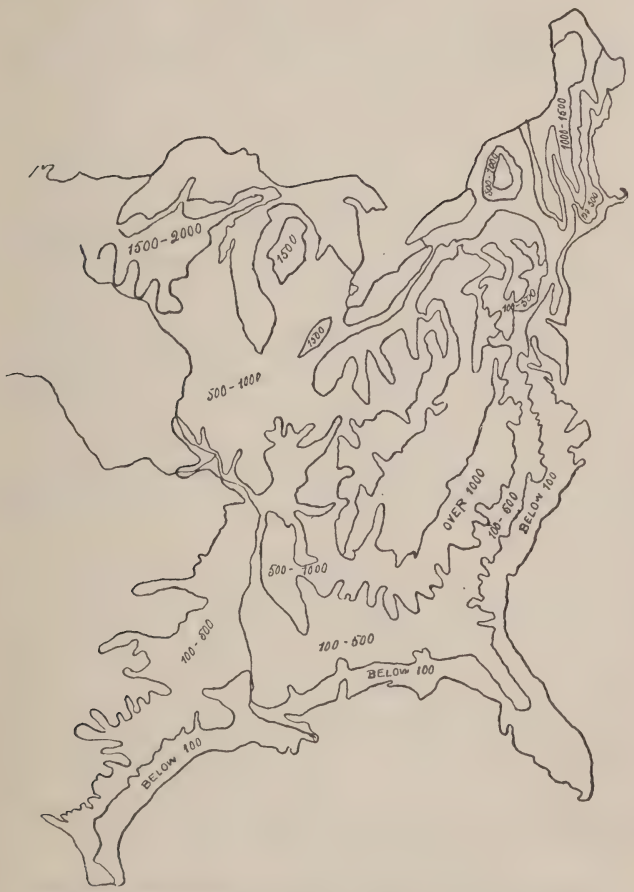


Fig 58.—Elevations Shown by Contour Lines. Census Report, 1880.

being said to contain more precious minerals than any other range in the world) : in the east they are covered with forests. The Alleghanies are both covered with forests, and filled with coal and iron.

PLAINS

1. The Central Plain.

[Examine the maps, and see if this plain extends from the Gulf of Mexico to the Arctic Ocean, bordered on each side by the two highlands already described, thus forming one of the largest valleys in the world.]

Some one has said, "In this Central Plain is rolled out, in one uniform expanse of 2,800,000 square miles, an area of arable land equal in surface to all the valleys of all the other grand divisions."

It is triangular in shape, narrow at the south, and very broad at the north. Formerly it was part of a great inland sea.

It is crossed in the middle by a low water-parting called the *Height of Land*, dividing the valley into two slopes. So gradual are these slopes, a person might travel from the mouth of the Mississippi to the mouth of the Mackenzie River, and not realize he had experienced any difference of elevation. The slope westward from the Mississippi River to the Rocky Mountains is also very gradual. *Hence all the rivers in this plain are navigable for long distances.* In the valley of the Red River of the North, the land is so level that a person crossing it sees first the tops of the trees and the houses, just as ships are seen at sea, showing the sphericity of the earth.

2. The Atlantic Plain.

This plain lies between the Atlantic Ocean and the Appalachian Mountains, and stretches from the Gulf of Mexico to Labrador.

It may be divided into the hilly and the level country. South of New York the level country lies near the coast, and is separated from the hilly country by the falls at the head of tide-water, thus indicating the distance these Atlantic rivers are navigable. At the head of navigation on each river is situated a large city.

[Pupils notice location of Newark, Trenton, Baltimore, Washington, Fredericksburg, Richmond, Petersburg, and Weldon.]

[The pupils now should draw the important ranges of mountains on the progressive map, and print or write their names in the proper places, as they are on the text-book map. An excellent selection to read the class at this point will be found in W. G. Marshall's *Through America*, in the chapter devoted to the Yosemite Valley.]

V. DRAINAGE

North America is richer in navigable rivers than Asia, or any of the grand divisions of the Old World.

1. Water-Partings.

There are *three* plainly marked water-partings indicated on any map of North America.

1. The Pacific Highlands.
2. The Atlantic Highlands.
3. The Height of Land.

[The teacher should call attention of class to flow of rivers from these water-partings.]

The *South Pass* in the Rocky Mountains is the one great continental divide. From this vicinity, the land

descends towards the Gulf of California, the Pacific Ocean, the Gulf of Mexico, the Mississippi Valley, the North Atlantic and the Arctic seas.

[Look on the map, and see how the rivers flow from the *South Pass* in various directions.]

Thus towards the Mexican Gulf run the Rio Grande and its companion rivers of Texas. Down the "Great Prairie Plains" descend the Red River, Arkansas, Missouri, etc. All of these run due east, parallel to one another, very straight, and with few rapids, and they flow into the great central trough, the Mississippi, which runs from north to south across their general direction.

From the map, learn the order in which these, the important rivers of this country, are named, and their respective locations: —

1. Yukon.
2. Mackenzie (named after Sir A. Mackenzie).
3. Saskatchewan (swift current).
4. Nelson.
5. St. Lawrence (given by Cartier, 1535).
6. Mississippi (father of current).
7. Missouri (mud water).
8. Nebraska (flat water).
9. Arkansas (a bow of smoky water).
10. Ohio (beautiful river).
11. Rio Grande (great river).
12. Colorado (red).
13. Columbia (named by Capt. Gray, 1792).
14. Frazer.

Do the four bordering waters of the country receive the drainage of these fourteen rivers? If so, the ***systems*** might properly be named after them.

2. River Systems.

[Let the pupils find the other rivers from the map.]

SYSTEM.	RIVERS.
1. ARCTIC	1. Mackenzie, Saskatchewan, etc. 2. Nelson, etc.
2. ATLANTIC . . .	St. Lawrence, Connecticut, etc.
3. GULF	1. Mississippi, Missouri, etc. 2. Rio Grande, etc.
4. PACIFIC	1. Yukon. 2. Frazer. 3. Columbia. 4. Colorado.

[The teacher can make a pleasant exercise by writing a part of the above, and asking the pupils to fill in the remainder.]

The Great Lakes.

These lakes are situated in the central part of the great Central Plain, just south of the height of land, in a depression which drains towards the Atlantic Ocean.

They have a shore-line more than three thousand (3,450) miles in length. They are connected with one another, thus affording an immense system of inland commerce. It is thought that they contain one-half of all the fresh water in the world. Each one is so large, it seems like a sea, and greatly affects the climate of the country around it.

Lake Superior is three hundred and fifty miles long, and as large in area as all the New-England States except Maine. The surface of this lake is six hundred feet above the sea, and its bottom as many feet below the sea.

The shores of Lake Superior are everywhere rocky and bluff, and rich in mineral wealth and timber. Native copper abounds on both the northern and southern shores, and on Isle Royale. Here are found beautiful specimens of this ore. The celebrated pictured rocks are along the south shore. They are of various colors, as if painted by Indian artists, and in the distance resemble castles.

Lake Michigan is next in size; twenty feet lower in level, and its average depth about the same. ***Huron*** is nearly as large and

deep, and it is on the same level. The shores of both are low and heavily timbered. ***Erie*** is very shallow, and much disturbed by storms. ***Ontario*** means beautiful. This lake, though farther north, has much less ice in it than Erie. Like Superior, its bottom is as far below the level of the sea as its surface is above it. The water in passing from Lake Superior to Lake Ontario descends three hundred and seventy feet, and only two hundred and thirty feet more to reach tide-water.

[The teacher, by putting the following simple illustration on the blackboard, will greatly interest the class in these lakes. See Fig. 59.]

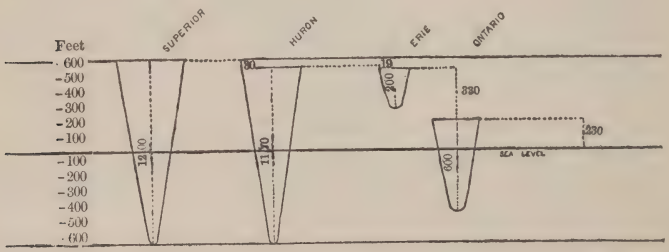


Fig 59. — The Great Lakes.

Showing heights above and below sea-level, and with one another.

Description of Four Characteristic Rivers.

[Let the pupil by the list of sub-divisions under river-systems, p. 48, learn and describe most of the points in reference to each river.]

Mississippi River. — The Mississippi River, with its longest branch (Missouri-Mississippi), *rises* in the ROCKY MOUNTAINS, and drains the southern slope of the *Central Plain*. It flows in a SOUTHERLY *direction* through the United States, measuring from the *source* of the Missouri to the *mouth* of the Mississippi, in the Gulf, FORTY-THREE HUNDRED MILES, thus making it the LONGEST river in the WORLD.

Its main branch is *navigable* to the *Falls of St. Anthony*, near St. Paul. Its *course* throughout is very winding, and some of the turns are called ox-bows. (See Fig. 60.) In the upper part it is bordered

by high, steep bluffs, being the margins of the flat prairie level, which stretch back to a limitless distance on each side. Between the bluffs the great river meanders from side to side, in a broad bottom-land of inexhaustible fertility. Farther south the bluffs disappear, and the banks become low.

If the Mississippi were left to itself, it would overflow its natural banks for hundreds of miles above the mouth. The planters have built continuous lines of earth-embankments, called *levees*, to keep the river in its proper channel. The river is not only constantly

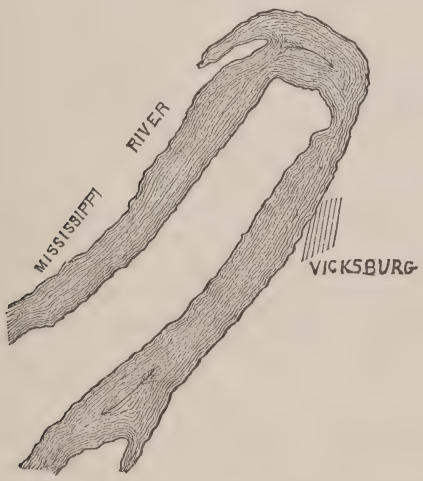


Fig. 60. — The Great Bend in the Mississippi River.

changing its course, but it deposits sediment upon the banks, so that, as a person goes inland from the river, he descends at least four feet to a mile. The water in the river is often as high as the second-story windows of the planter's house. In springtime these levees frequently break away, causing dismay to the inhabitants, and destroying immense property. In the great crevasse of 1874, steamers sailed over the streets of villages.

At New Orleans the river is one and a half miles wide. Below the city are many large sugar-plantations near the river, the dwelling-

houses of which are hidden by magnificent trees. Farther down, the banks are called the "coast," along which are found the "gardens" that supply the "Crescent City" with its vegetables.

Owing to the muddy character of the water, the river now loses all its beauty and picturesqueness. The scenery is very monotonous. Twenty miles from the Gulf the great river divides into many branches, called passes. The four largest are known as the South-west, South, North-east and A Loutre passes.

Capt. Eads, in behalf of the United-States Government, with great skill and at great expense, built in the South Pass "jetties," or artificial banks, by which the current is made to deepen its own channel. Had not this been done, the commerce of the river would have been seriously impaired by the yearly deposits of mud. The river now admits the largest cotton-ships.

Instead of one grand current pouring into the ocean its mighty flood of fresh waters, as is the case at the mouths of the St. Lawrence and Amazon, the mouth of the Mississippi consists of numerous arms, the principal of which are the four passes mentioned above, flowing through low swamps, and forming, from the great quantities of mud in the water, numerous islands. This network of creeks, bayous, and passes, makes the delta of the Mississippi, which is gradually extending itself into the Gulf of Mexico.

La Salle was the first to pass down the river and into the Gulf (1682). But, when he returned from Spain with a large expedition to find the mouth of the same river from the sea, he searched for many weary months without success; and his men, incensed by his repeated failures, assassinated him.

Foster, in his *Mississippi Valley*, says, "The Mississippi River, when we consider its great length, the number and character of its tributaries, often exceeding the first-class rivers of Europe, the area of country which it drains, the vast system of internal navigation which it affords, and the populous towns which have been founded on its banks, may be regarded as one of the most striking topographical features of the earth."

This river has fifty-seven *branches*, the most important of which are the Missouri, Ohio, etc.

A distinguished French writer once said of it, "Upon the whole, the most magnificent dwelling-place prepared by God for man's abode."

What Douglas Jerrold said of Australia is true of this valley: "Just tickle her with a hoe, and she laughs with a harvest."

[Let the teacher read to the class a few selections from Bishop's *Four Months in a Sneak-Box*.]

"The Missouri River, opposite Bismarck, Da., is very swift, six miles an hour; and it is impossible for the strongest swimmer to save himself if once he falls in. The mud will settle on him, clog his movements, and bear him under.

"The river here is very crooked, full of sand-bars, the channel changing every year. Great portions of the banks become honeycombed by the force of the water, and are constantly caving in with a loud thud." — *Boots and Saddles*, p. 186.

The St. Lawrence River. — The St. Lawrence River, taken in the fullest sense of the name, rises in the St. Louis River, which flows into Lake Superior. In different parts of its course it is known by different names. Thus from the sea to Kingston, it is styled the St. Lawrence; between Lakes Ontario and Erie, the Niagara; between Lakes Erie and St. Clair, the Detroit; between Lakes St. Clair and Huron, the River St. Clair; between Lakes Huron and Superior, the Narrows, or Sault St. Marie, — all of which sections form a waterway of 2,384 miles.

Lake Superior is, however, the inexhaustible spring of the river. It issues from the lake with rapid current, rushes through the Narrows of the Sault St. Marie for a distance of twenty-seven miles, and, tumbling over a rocky bed, enters Lake Huron.

This last-mentioned lake is said to be a thousand feet deep, and to abound in fish. From the southern extremity of Lake Huron the channel contracts to the narrow and swiftly flowing St. Clair River, which, sixty miles farther south, expands into a lake by the same name. Between this lake and Erie the stream is called Detroit, and it contains many islands of considerable size.

Niagara River is thirty-six miles long, and from half a mile to three miles wide. Its course is north, and the stream is divided by many islands, of which Grand Island is the largest, and Goat Island the most picturesque.

The levels of the country here change, by a sudden drop, to the level of Lake Ontario, three hundred and thirty feet nearer sea-level. (See p. 278.) As the Niagara River approaches its fearful leap of a hundred and sixty feet, its waters lash themselves into a fury, and surge like the breakers on a rock-bound coast. This is true to even a greater extent below the Falls, at the narrow gorge, appropriately called the Whirlpool.

Goat Island divides the waters of the Fall. On the Canadian side, or left bank, the rock is worn into the shape of a horseshoe, and hence its name the Horseshoe Falls. This part has a width of nineteen hundred feet.

The American Fall is straight in its line, only one-third as wide,

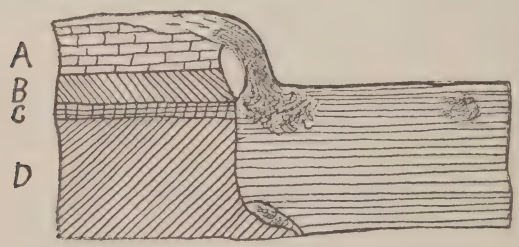


Fig. 61.—Profile of Niagara Falls.

A, Limestone, a hard rock. B, a softer rock. C, Marl, still softer. D, Sandstone, very soft.

and carrying much less water, but to many observers fully as attractive. (Read Gilbert's "Niagara Falls.")

The reason of the falls, and the constant wearing back of the edge of the falls, can be explained to a class very easily by drawing on the board Fig. 61, and showing the nature of the upper and lower beds of rock.

The Falls, in order to be fully appreciated, must be seen from Goat Island, Suspension Bridge, the Canadian Side, and especially from behind the vast sheet of water, in the "Chamber of Winds."

N. P. Willis says of this great wonder of Nature, "Mountains of water, belching forth the most appalling sounds; globes of foam, boiling with rage; rainbows with numerous and splendid arches; rocks

bold, projecting over the tumultuous abyss; spray-covered forests, decorated with pearly drops."

The rumble or thunder of the Falls is sometimes heard forty miles away, and the trembling of the earth for fifteen miles around; while the column of spray is visible sometimes seventy miles. The sound is not an ear-cracking crash and clang of noises, but it is sweet and soft. You can speak to your neighbor without effort.

The power of this mighty cataract has been estimated as high as 4,500,000 horse-power; and some practical people would like to make it work, and set dynamos in motion, storing up power, to be conveyed hundreds of miles away by electricity.

For five miles the river flows through its deeply cut channel in the solid rock in a very quiet manner, till the great maelstrom, or whirlpool, is reached. After this is passed, the velocity of the river is subdued, and it follows a tranquil course to Lake Ontario.

At the eastern end of this lake, the St. Lawrence River proper begins. For forty miles it is studded with innumerable islands. To avoid exaggeration, they are called the "Thousand Islands." In summer, tourists visit this section of the river in great numbers, and all praise its beauty.

On the way to Montreal the river widens twice into large lakes, and descends several times so as to form rapids, of which there are six of some importance, — the Lachine, near Montreal, being the most picturesque.

Below the last-named rapids, the river contracts to about two miles, and is spanned by that remarkable iron structure called the Victoria Bridge. Montreal stands on an island, and rises terrace above terrace, till Mount Royal is reached covered with majestic maples and pines. No fairer picture can be seen on this continent than the view from this mount, of city, river, and bridge.

From Kingston to Montreal the banks of the river are very moderate in height, and the adjoining country, the valley of the river, remarkably level. But as Quebec is approached, the country becomes more hilly; and the banks become higher and higher, until they attain the height of Cape Diamond, on which the citadel of Quebec stands.

The view from this fortress of the St. Lawrence seen for forty

miles, crowded with innumerable sail; of the Isle of Orleans; of the River St. Charles; of so many fertile valleys, hills, and pretty villages near by; and of the bold mountains far away, — is thought by some to surpass the views from the castles of Edinburgh and Stirling in Scotland.

The St. Lawrence soon begins to widen into an estuary, as the many tributaries greatly increase the amount of the water, especially the Saguenay, whose mouth is a mile wide and a thousand feet deep. Opposite Iberville the St. Lawrence River is thirty miles wide. Two hundred miles farther, the voyager reaches the mouth of this mighty stream, and the island of Anticosti, — a favorite resort for bear-hunting, salmon and trout fishing.

"The *Saguenay,*" says B. Taylor, "is not properly a river. It is a tremendous chasm like that of the Jordan Valley and the Dead Sea, cleft for sixty miles through the heart of a mountain wilderness. Every thing is hard, naked, stern, silent. Dark gray cliffs of gneiss rise from the pitch-black water, and furrows of gloomy green are rooted in their crevices, and cover their summits. . . .

"The water beneath us was black as night, with a pitchy glaze on its surface. The river is a reproduction of the fjords of the Norwegian coast."

Saguenay comes from two Indian words, which mean *precipices for banks.* Near Cape Eternity it is eighteen hundred feet deep. In some places no sounding-line has been found long enough to touch bottom.

Comparisons.

[Let the children tell what to write.]

Mississippi.	St. Lawrence.
Rises in mountains.	Rises in Great Lakes.
Flows south.	Flows north-east.
Bluffs.	Rocky banks.
Muddy.	Clear.
Constantly rising and falling.	Steady and uniform.
Crooked.	Straight.
Delta.	Estuary.
4,300.	2,000.
etc.	etc.

Columbia River. — This river rises on the western slope of the ROCKY MOUNTAINS. Part of its sources is in BRITISH COLUMBIA, and part in the UNITED STATES. Although it flows, at different places, in all the directions of the compass, its general course is westward to its mouth in the PACIFIC OCEAN. It is about FOURTEEN HUNDRED miles long.

It is *navigable* in sections. The first section is to the Cascades (a hundred and sixty miles). Here a portage of six miles is necessary. The second section is to the Dalles (fifty miles). This obstruction to navigation is fourteen miles long. The third section is a hundred and eighty-five miles long; and the fourth reaches to Fort Colville, above the Arrow Lakes in Columbia.

Its *branches* are WILLAMETTE, LEWIS (or Snake), and CLARK. The two latter were named after Messrs. Lewis and Clark, who took that perilous journey over the Rocky Mountains in 1803, and discovered these rivers. [Graphically described in *Northern Pacific Railroad*, by Smalley, pp. 12–20.] The valley of the Columbia in British Columbia is narrow, and bounded on both sides by snow-clad peaks.

The ***Colorado River*** rises on the western slope of the Rocky Mountains; the north branch, called the Green River, coming from the South Pass in Wyoming Territory, and the south branch, called the Little Colorado, rising among the mountains of New Mexico, while the central branch, called the Grand River, starts in the centre of the State of Colorado, at the foot of those mighty peaks, Pike's and Long's.

This river occupies the bed of a depression, and flows nearly in a southern direction through South-eastern Utah, and along the western boundary of Arizona. Most of the branches enter the main stream at right angles. Like many other large streams, it cuts its way across seemingly impossible obstacles, and presents thereby some of the grandest scenery in the world. A large part of the surface of this region consists of bare rocks, with no soil or vegetation. The landscape everywhere is of rocks, — cliffs of rock, tables of rock, plateaus of rock, terraces of rock, crags of rock; a whole land of naked rock, with giant forms carved on it; cathedral-shaped rocks, all highly colored, — buff, gray, red, brown, and chocolate.

Great cliffs, thousands of feet high, and extending like huge walls

for hundreds of miles, change the level of the country at a single step. Most of the rivers in this country flow through cañons; i.e., through cuts in the mountains which are very deep, and far below the general level of the country. The Colorado River runs in a cañon for over a thousand miles. One of the cañons in Arizona is over two hundred miles long.

Major Powell explored this marvellous cañon in 1869, and his report reads like fiction. In one place he passed through Horseshoe Cañon, which describes an elongated letter U, in the mountains.

The cliffs here reach a thousand feet in height, and the water usually fills the width of the channel; but occasionally the cañon opened into a little park covered with a grassy carpet of crimson flowers, or patches of blue and yellow blossoms.

At another place he walked for more than a mile on a marble pavement embossed with a thousand different patterns.

Day after day there were rocks, deep gorges, towers and pinnacles, side cañons and recesses, thousands of strangely carved forms, and mountains blending with the clouds. Sometimes the clouds would roll into the cañon so as to fill it with gloom; sometimes they hung from wall to wall, forming a roof. Then a gust of wind from a side cañon would make a rift in them, and reveal the blue sky above. The rocks were of many colors, — white, gray, pink, and purple, with saffron tints. The part of the cañon below the Little Colorado is called "Marble Cañon." Here the scenery is magnificent; but fifty miles below, the river enters the Grand Cañon, which surpasses every thing of the kind in the world.

Major Powell, in describing this part of his trip, says, —

"The walls now are more than a mile (seven thousand feet) in height, a vertical distance difficult to appreciate. . . . A thousand feet of this is up through granite crags. The steep slopes and perpendicular cliffs rise, one above another, to the summit. The gorge is black and narrow below, red and gray and flaring above, with crags and angular projections on the walls, which, cut in many places by side cañons, seem to be vast wildernesses of rocks.

"Down in these grand, gloomy depths we glide, ever listening, for the mad waters keep up their roar, ever watching, ever peering ahead, for the narrow cañon is winding, and the river is closed in, so we can

see but a few hundred yards; and what there may be below, we know not. But we listen for falls, and watch for rocks, or stop now and then in the bay of a recess to admire the gigantic scenery."

[If the class is deeply interested, further information can be found in Powell's Reports, published by the Government, in *Stanford's Compendium of North America*, p. 98, or in *King's Elementary Geography*, p. 143.]

The Colorado River for its length of two thousand miles contains little water, and consequently it is navigable but a short distance. [Why is there so little water in this river?]

On the Frazer River. — The scenery of the Frazer is in some places grand in the extreme, and many persons think it excels that of the Columbia River. At "Hell's Gate," about ten miles above Yale, the river rushes through a channel only fifty yards wide, the rocks on each side being perpendicular. The difference between the height of the river in summer, at the melting of the snows, and in winter, is not less than ninety feet, as may be seen by the high-water marks on the rocky walls.

"Rugged and inaccessible mountains rise to a height of several thousand feet, and are so precipitous that a feeling of giddiness is experienced when looking up to their snowy summits. A very pretty suspension bridge crosses the river about ten miles above Yale, and makes a picturesque break in the stupendous character of the scenery. Just imagine grand cañons and giant cliffs, along whose rugged sides the road runs, and whence the swift-rushing river, far, far below, looks like a mere silken thread; wild heights, sometimes bare, sometimes pine-clad; snow-capped peaks, rising above ranges of lofty mountains; the narrow pass dwarfed by the altitude of the towering rocks on both sides, — and you have some of the ingredients of the Frazer scenery. — *Western Wanderings*, BODDAM-WHETHAM, London.

[With a little help from the teacher, let the children work out a description, in a similar manner, of the largest river within three hundred miles of their homes.]

BOOKS FOR CONSULTATION

Atkinson's Philippine Islands.
Brooks's Cotton, Its Uses and Culture.
Bancroft's Mexico.
Fairbanks's Western United States.
Fountain's Great Deserts and Forests of North America.
Greeley's American Weather.
Heilprin's Alaska and the Klondike.
Hunter's American Isthmus.
Johnson's American Railway Transportation.
Jordan's Fishes of North America.
Muir's Our National Parks.
Patton's Natural Resources of the United States.
Peary's Over the "Great Ice."
Worcester's Philippine Islands.

CHAPTER XIV

WHAT TO TEACH ON NORTH AMERICA Continued

North America will rapidly accumulate a population equalling that of the rest of the world combined: a people one and indivisible, identical in manners, language, customs, and impulses; preserving the same civilization, the same religion, imbued with the same opinions, and having the same political liberties. — *William Gilpin.*

BOOKS FOR CONSULTATION[1]

ALDRIDGE'S RANCH NOTES.
ABERCROMBY'S WEATHER. *Illustrated.*
BODDAM'S PACIFIC COAST.
BROWN'S NOTES ON THE NORTHERN ATLANTIC.
BLODGETT'S CLIMATOLOGY.
CUSTER'S BOOTS AND SADDLES.
DALL'S ALASKA.
GREELY'S THREE YEARS OF ARCTIC SERVICE. *Illustrated.*
HAYES'S LAND OF DESOLATION. *Illustrated.*
HAZARD'S CUBA.
HATTON'S NEWFOUNDLAND.
HUTCHINGS'S CALIFORNIA.
KANE'S ARCTIC EXPLORATIONS. *Illustrated*
KINGSLEY'S AT LAST.
NOURSE'S AMERICAN EXPLORATIONS. *Illustrated.*
OBER'S MEXICO. *Illustrated.*
PORTER'S THE WEST. *Illustrated.*
RINK'S GREENLAND. *Illustrated.*
BRADLEY'S CANADA.
WHYMPER'S ALASKA.

[1] See also list, p. 326.

CHAPTER XIV

WHAT TO TEACH ON NORTH AMERICA, Continued

POLITICAL DIVISIONS — SELECTIONS — GREENLAND — ALASKA — POLAR REGIONS — BIRCH BARK — BIG TREES — MEXICO — JAMAICA — LETTER — NATURAL DIVISIONS — CLIMATE — PECULIARITIES — OCEAN CURRENTS — EPITOME OF CLIMATE — LIFE: VEGETABLE — ANIMAL — HUMAN — RACES — POPULATION — OCCUPATION — A CALIFORNIA FARM — A BONANZA FARM — COMPARISONS — MANUFACTURING — MINING — GOLD — SILVER — GRAZING — FISHING — LANGUAGE — MANNERS AND CUSTOMS — EDUCATION — RELIGION — GOVERNMENT

VI. POLITICAL DIVISIONS

[Let the teacher draw upon the board two perpendicular lines, so as to make three wide columns, and then ask the pupils, one by one, to name in order the political divisions, then the capitals of each, and finally the other important towns not mentioned. The exercise, when finished, will appear like that given below. After study, test the pupils by sending them to the board to write and spell without the help of the book these divisions and towns. Both exercises will greatly interest them.]

Countries.	Capitals.	Cities and Towns.
Danish America . .	. . . . .	Lichtenfels (residence of the Governor).
Greenland	. . . . .	Upernavik (spring place).
Iceland	. . . . .	Reikiavik (steam-town).
British America . .	Ottawa . . .	Montreal (268,000), Toronto, Quebec, Halifax, St. John, Winnipeg, Victoria.
United States . . .	Washington .	New York (4,000,000) Philadelphia (1,000,000,) Chicago, Brooklyn, Boston, Cincinnati, St. Louis, New Orleans, San Francisco.
Mexico	Mexico . .	Vera Cruz, Tampico, Acapulco.
Central America . .	. . . . .	Guatemala, Balize, Havana, Port-au-Prince.
West Indies . . .	. . . . .	Kingston, San Domingo.

Selections.

[The following extracts may be read to the class by the teacher, or by selected members.]

Greenland. — Dr. Robert Brown, one of the highest authorities, says, —

"Greenland is a large, wedge-shaped island, or series of islands, surrounded by the icy Polar Basin on its northern shores. . . . The whole of the *de facto* land of this great island consists, then, of a circlet of islets, of greater or less extent, circling round the coast, and acting as the shores of the interior *mer de glace*, — a huge inland sea of fresh-water ice, or glacier, which covers the whole extent of the country to an unknown depth. . . . These islands are bare, bleak, and more or less mountainous, reaching to about two thousand feet. The snow clears off, leaving room for vegetation to burst out during the short Arctic summer. . . . These inlets between the islands constitute the fjords of Greenland, and are the channels through which the overflow of the interior ice discharges itself. It is on these islands, or outskirting land, that the population of Greenland lives, and the Danish trading-posts are built; all the rest of the country being an icy, landless, sea-like waste of glacier." — *Arctic Papers.*

Alaska. — According to Whymper: "The Yukon River breaks up about May 19. At Nulato, which is six hundred miles above its mouths, it is, from bank to bank, one mile and a quarter wide. Its tributaries would be large rivers in Europe: and the proud boast of its natives is, 'We are not savages, we are Yukon Indians.' A steamer suitable to a shallow river could proceed eighteen hundred miles on the Yukon. The journey *down* the stream from Fort Yukon, at junction of Yukon and Porcupine rivers, to Nulato, six hundred miles, can be made in five days and twenty hours.

"At Fort Yukon, June 21, the night was very short, the sun being absent only forty-five minutes.

"The Aleutian Islands contain many active volcanoes. Altu is farthest west, in longitude 171° 30′ E."

"The ***Polar Regions*** of North America, lying between Alaska and Greenland, though included in British America, are scarcely inhabited, and have no character as political divisions. But they abound in all the wonders of the Arctic world; and these wonders have been explored and illustrated by the finest displays of enterprise, philanthropy, and science, in the many expeditions searching for the Northwest Passage and the pole. (Read Arctic explorers, like Peary, Kane, Hayes, Hall, and Schwatka.) The following extracts picture the Arctic summer and the Arctic night at 78° 38′ north latitude."

"*Nov.* 7. — The darkness is coming on with insidious steadiness, and its advances can only be perceived by comparing one day with the fellow of some time back. We still read the thermometer at noonday without a light, and the black masses of the hills are plain for about five hours, with their glaring patches of snow; but all the rest is darkness.

"*Dec.* 15. — We have lost the last vestige of the midday twilight. We can see no print, and hardly paper; the fingers cannot be counted a foot from the eyes. Noonday and midnight are alike; and, except a vague glimmer in the sky that seems to define the hill outlines to the south, we have nothing to tell us that this Arctic world of ours has a sun.

"*Jan.* 21. — First traces of returning light, the southern horizon having for a short time a distinct orange tinge." — *Kane's Journal.*

"The ***birch-bark canoe*** is the British-American camel. It is thirty or forty feet long, its sections secured together with the roots and filaments of the fir. If broken in, it may be patched like a coat, and calked with balsam as sound as ever. As it has a flat bottom, the shallowest river will float it. A boat which will carry four tons can easily be borne upon the shoulders of the crew. The uses of the paper-birch are almost as manifold as those of the palm-tree. The pliant bark, peeled off in large pieces, serves to cover the Indian's tent. Carefully sewed together, and ornamented with the quills of the porcupine, it is made into baskets, sacks, dishes, plates, and drinking-cups. The wood serves for the manufacture of oars, snow-shoes, and sledges; and the sweet sap in spring may be boiled to a sirup. It is a tree as far north as the Arctic circle: beyond, it becomes a shrub."

Giant Trees — The Big Trees. — There are eight groves in all, between the thirtieth degree and thirty-eighth degree, and between five thousand and seven thousand feet in elevation.

The Calaveras Grove is the one most visited and best known. It is on the western slope of the Sierra, in Calaveras County. It occupies an area thirty-two hundred feet by seven hundred feet. There are about a hundred *big trees* here. The highest tree is fifteen feet in diameter, and three hundred and twenty-five feet in height. "The Mother of the Forest," without the bark, is twenty feet through. The smallest of the thirty-one measured, is only two hundred and thirty-one feet high.

The Mariposa Grove is the one selected by the State for public use. It is near the Yosemite Valley. The trees are more numerous, and some say larger, in the latter grove. [Read *Our New West*, by S. Bowles, for further information.]

People along the South Atlantic and Gulf coasts are thus spoken of: —

"The oystermen and fishermen living along the lonely beaches of the eastern shore of Maryland and Virginia; the surfmen and light-house keepers of Albemarle, Pamlico, and Core sounds in North Carolina; the peanut planters who inhabit the uplands that skirt the network of creeks, marshes, ponds, and sounds; the piny-woods people, lumbermen and turpentine distillers, on the little bluffs that jut into the fastnesses of the great swamps of the crooked Wac'ca-maw River (North and South Carolina); the representatives of the powerful rice-planting aristocracy of the Santee and Pedee rivers; the colored men of the beautiful sea-islands along the coast of Georgia; the Floridians living between the St. Mary's River and the Suwanee (the wild river of song); the islanders on the Gulf of Mexico, where I terminated my long journey, — all have contributed to make the *Voyage of the Paper Canoe* a success."

"***Mexico*** lies at the meeting-place of two zones, the temperate and the torrid; and from its geographical position, combined with varying altitudes, possesses a greater variety of soil, surface, and vegetation, than any other equal extent of contiguous territory in the world.

"Basking in the sunshine of the tropics, her head pillowed in the

lap of the North, her feet resting at the gateway of the continents, her snowy bosom rising to the clouds, she rests serene in the majesty of her might. She guards vast treasures of gold and silver; emeralds and opals adorn her brow; while the hem of her royal robe, dipped in the seas of two hemispheres, is embroidered with pearls, and the riches of oceans." — *Ober's Travels in Mexico*, p. 194.

VII. NATURAL DIVISIONS

[Help the children to select and arrange as below]

1. Border Waters.

1. Oceans .	Pacific, Arctic, Atlantic.
2. Seas . .	Caribbean, Behring.
3. Gulfs . .	St. Lawrence, Gulf of Mexico, California. Georgia.
4. Bays . .	Baffin, Hudson, Delaware, Chesapeake, Campeachy, Honduras, San Francisco.
5. Straits .	Behring, Davis, Hudson, Belle Isle, Florida Channel, Yucatan.

2. Projections, etc.

1. Peninsulas.	Alaska, Labrador, Nova Scotia, Florida, Yucatan, Lower California.
2. Capes . .	Barrow, Farewell, Race, Sable, Cod, Hatteras, Sable, Catoche, San Lucas, Mendocino.
3. Islands .	Arctic Archipelago, Iceland, Newfoundland, Cape Breton, Bermuda, West Indies, Vancouver, Queen Charlotte, Baranoff, Aleutian.
4. Isthmus .	Panama.

VIII. CLIMATE

North America extends so far north and south, it contains every variety of climate in the world. For convenience in considering this important subject, divide the country into *three* belts which may be named, 1. *Northern Belt;* 2. *Central Belt;* 3. *Southern Belt.*

Peculiarities.

Northern Belt.—Cold winds and ice abound. There is no rain within the area of 80° N. excepting in July and August.

Nineteen inches of snow sometimes falls in one day. Perfect crystals of snow are only seen when the snow falls in a mild temperature. Snow in the Arctic regions, dry and hard; flakes usually small, frequently very fine; when driven by the wind, very hard to face. Esquimau dogs dislike to go against the wind.

The glaciers move about ninety-six feet during winter. At midsummer (June 21), at 80° N. at mid-day, the thermometer stood in the sun 57°.

Extremes of heat at Sitka, for forty-five years, equal 87.8° to — 4°. Average for the year equals 43.3°. The mercury fell below zero only four years out of the forty-five. The climate is warmer than Boston, about that of Tennessee. The great cause of this is the Japanese Current. Sitka has the most rain of any place in the temperate climate.

The climate of Dakota is so fine, persons poisoned with malaria soon become perfectly well.

Middle Belt.—The climate of San Francisco is agreeable for work, rather than for laziness. Sauntering or lounging is as little possible as it is in London. It is never too hot, never too cold, to work. In the summer at San Francisco it is cold after eleven o'clock in the day. The cold wind rushes in through the Golden Gate in a never-ceasing gale, hence the Golden Gate is often called the "keyhole." The fog so common about this Gate, retarded its discovery for a hundred years.

Southern California presents a most invigorating and stimulating climate, as much so as Minnesota, without being so intensely cold. Nearly every day can be spent out of doors by invalids. Such flowers as the tuberose, the jessamine, the gilliflower, and heliotrope, are in bloom in the open garden in January. The vegetable gardens are as green as they are in New England in June, and the boys are seen in winter gathering the orange-crop. Better climate than Italy. Winter resorts at Los Angeles and Santa Barbara.

The dryness of the air in Minnesota permits a lower range of temperature without frosts, than in a moist climate. The climate of Denver permits invalids to spend several hours in the saddle nearly every day of the three hundred and sixty-five.

Starting at the one hundredth meridian and going west, the climate becomes more and more arid. Aridity reaches maximum at the eastern base of Sierra Nevada and Cascade.

Climate of American Plateau local but uniform. Vapors excluded from sea by Cordilleras. A rainless atmosphere, perpetually dry, tonic, and transparent. Cloudless sky. No dew at night. Meat dries (jerking). Snow evaporates directly without melting. Mountain ranges run north and south, affording constant sunshine in the valleys, like Europe and Asia. Extremes of temperature for day and night great; for the year small.

On the Rocky-Mountain Plateau, six thousand feet above the sea, the grasses, as they stand on the soil, are cured in the sun during the summer. It is so cold and dry here, the grasses do not rot. The snows are so fine that they are blown into drifts, and a large part of the land is not covered. In these natural abodes of the antelope and buffalo, our domesticated animals live through the winter without man supplying them with food.

Ocean Currents.— "Everybody understands that the continents are tally-ho coaches driving toward the sunrise, and that the wind blows in the faces of those who sit on the front seats of coaches. The wind that bore Columbus across the Atlantic, and Magellan across the Pacific, blows in the faces of the tally-ho coaches of the continents, driving out of the sunset into the sunrise. As the trade-winds in the tropics blow from the east to the west, at a speed often reaching fifteen or eighteen miles an hour, they produce a current in the ocean, moving in the same direction across the tropical zone. When that current strikes the east side of a continent it divides, and part goes north and part goes south. As the portion moving toward the pole flows away from the tropics, it of course reaches a part of the earth moving with less rapidity than that from which it came. Everybody sees that the equator must revolve with far greater rapidity than the Arctic circle, simply because it is larger, and must turn around in

the same time. The motion of the earth decreases from the equator to the pole. As the warm current passes from the equator to the North Sea, in our Atlantic basin, it is constantly transferring itself to parallels that move less rapidly than those which it left at its last place of departure.

"The water does not at once lose the speed of eastern motion it had nearer the equator, and so slips eastward faster than the northern water it meets. Thus arises a translation of a great body of water toward the sunrise. In this way originates the Gulf Current, the cause of which was a mystery for ages. So in the Pacific Ocean, under the sweep of trade-winds, and the influence of the difference of temperature between the torrid and the northern waters, there is produced an enormous equatorial current moving from east to west.

"On reaching the Asiatic coast and islands, a part of this vast stream goes north and a part south. The portion which goes north is, of course, always dropping into latitudes where the motion of the earth is less rapid, and therefore there is a translation of the waters toward North America. Thus springs up a gulf current in the Pacific. (Guyot: *Physical Geography*, p. 65.) It pours out of the East Indies as ours does out of the West Indies. It leaves the coast of China and Japan as ours does that of America. It is called the Japan Current, or Black Water, and farther on has the name of the North Pacific Current. It divides at the westernmost end of the Aleutian Islands. A part of it runs through Behring Straits. That is the reason why the ice never drifts through those straits into the Pacific, and why the transit of steamers between China and the United States is likely to be free from icebergs. The larger part of the current goes south of the Aleutian Archipelago, and strikes our continent first on the coast of Alaska. As the Gulf Current warms England, so does the North-Pacific Current warm Alaska and Oregon. But the Atlantic is more open to the Arctic Sea than the Pacific is, and so the latter current is less cooled by cold water from the north than the former." — From Mr. Joseph Cook's *Monday Lectures.*

The climate of Newfoundland is treated in a most interesting manner by Joseph Hatton, in his book on that noted island, p. 188.

[Teachers should place upon the board the epitome of this subject in four parallel columns, as given on p. 300. The pupils copy in their blank-books, study, then recite by writing on the board or on paper.]

IX. LIFE

For convenience of studying the two first sub-divisions of life, the country may be divided, just as it was for climate, into three belts. [Ask the pupils to name them.]

1. VEGETABLE LIFE

Northern Belt. — Mackenzie, the discoverer of the Mackenzie River, says that stunted shrubs of the hardiest kinds — dwarf birch, willows, and the like — scantily clothe the more favored spots along the water-courses; while elsewhere various lichens, — the peculiar food of the reindeer, — interspersed with stones and stagnant water-pools, alone characterize the dreary scene.

"*Jamaica* is the black man's paradise. A bountiful nature waits upon him, tempting him to "sweet do nothing," by the abundance she yields at the slightest of solicitations.

"The yam and sweet potato vie in the value of their product; the bread-fruit drops into the upraised palm of the negro; the plaintain and banana hang a load of food at his open cabin window. He has to add a little salted fish from the shop; and to this, nature adds a delightful condiment in the fruit of the ackie. If his occasional treat of beef is tough, he has but to rub it with leaves of the pawpaw, and it rivals the choicest cuts of tenderloin.

"With leaves of hibiscus he polishes his Sunday boots, if he has any; the soap-berry helps him to wash his clothes; "chew-stick" polishes his teeth; cinchona cures his fever; and, if he has any other wants, the cocoanut-palm is there with its oil, fruit, fibre, etc., to supply them.

"Truly a bountiful nature, and in return he is a happy child of nature. Care runs off his light-hearted disposition as water from a duck's back." — *The Appalachia*, Vol. III. No. 3.

2. ANIMAL LIFE

[The teacher can make this a very interesting exercise by assigning one characteristic animal to each child, and asking the pupils to be ready to talk for his animal at such a time. The teacher should be ready to supply deficiencies, by way of anecdotes and stories.]

CLIMATE OF NORTH AMERICA

Belts.	Countries.	Causes.	Facts of Climate.
Northern .	Greenland, British America (north of the height of land). Alaska (northern part).	LATITUDE. NORTH WINDS. Ice and snow. Polar currents (eastern); Japan Current (western). West winds.	FRIGID; the cold region. Ground frozen during the year. Hudson Bay open only six weeks. LONG NIGHTS. Snow falls every month.
Central . .	United States, British Columbia, Canada. Alaska (southern part).	LATITUDE. MOUNTAINS. MOIST WINDS *from* GULF of MEXICO and ATLANTIC Ocean, from Pacific and Rocky Mountains. Counter trade-winds on Pacific. Gulf Stream; Japan Current. Elevations; plateaus.	TEMPERATE. FOUR SEASONS. Atlantic coast and lower half of Mississippi Valley, *moist*. Central Plain, *less moist*. Between Rocky Mountains and Sierra Nevada and Cascade Range, *very dry*. *Two seasons* in California, — cool summers and warm winters. Snow seldom seen in San Francisco.
Southern .	Mexico, Florida, West Indies. Central America.	In or near the TROPICS. Abundance of RAIN in heavy, daily showers. ELEVATION in Mexico.	TORRID. TWO SEASONS. *Temperate* in parts of Mexico on account of *elevation*.

SUMMARY OF FACTS IN REFERENCE TO VEGETABLE AND ANIMAL LIFE

Belts.	Vegetable Life.	Animal Life.
Northern .	Moss, lichens, sandwort, scurvy-grass, saxifrage. Spruce, fir, birch, alder, pine. Oats, rye, barley.	Polar bear, whale, walrus, seal. Reindeer, musk ox, eider-duck, wild ducks. Caribou, auk. Fox, sable, marten, ermine, mink, otter.
Central . .	Pine, oak, hemlock, spruce, elm, walnut, chestnut, ash. Wheat, maize (corn), oats, rye, barley Vine, apple, peach, pear. Potatoes and other vegetables. Tobacco. Cactus and sage-bush. Cotton, sugar-cane, rice.	Grizzly, black, common brown bear. Bison, moose, antelope. Beaver, fox, wolf. Jaguar, puma, prairie dog, opossum. Rattlesnakes. Eagle, pelican, wild turkey, wild ducks. Salmon, trout, cod, herring, halibut, oysters.
Southern .	Live oak (Florida), rosewood, mahogany. Sugar-cane, indigo, dye-woods. Orange, lemon, pineapple. Palm, cocoanut, bread-fruit.	Monkeys, jaguars, pumas. Parrots, humming-birds, mocking-birds. Alligators, lizards, turtles, tarantulas.

3. HUMAN LIFE

Interesting and wonderful as this topic always is in studying various countries, the subject is never more fascinating than in reference to the development of Human Life in North America.

Iceland may boast of an authenticated history running back one thousand years, but how slow its progress in human growth and development! The rest of North America presents an illustration of rapid growth in population, wealth, and refinement, such as no other country ever enjoyed.

Races.

This country is the old home of one well-defined race, and the new home of nearly all the other races. The four races are named below, in the order of their number.

1. CAUCASIAN. — Descended from different colonies, which came from Europe and settled here in the seventeenth century. This source has been constantly increased by immigration. Found all over the country. Numbers sixty-seven millions in U.S.
2. ETHIOPIAN. — Descended from slaves introduced into the United States and Spanish America. First cargo brought over in 1619. Found principally in southern part of United States, and in West Indies. Now numbers nine millions in United States. Rapidly increasing.
3. AMERICAN. — Called Indians, aborigines, or original inhabitants. America is their natural home. Columbus first introduced this race to the learned men of Europe in 1493. Indians then owned all the land. Now an Indian is not a citizen, and cannot vote, even if he owns property. Two-thirds of the Indians are settled on separate reservations, under government protection and aid, with a view to civilization. Some of them are

wealthy: some are being educated at Hampton and other schools. Now found principally in British America, western part United States, and Mexico. They number five million in all, of which two hundred and sixty thousand are in the United States.

4. MONGOLIAN. — Esquimaux, Chinese, etc. The former are superior to the Patagonians, living in the same latitude. They are skilful in making their dress, habitations, and tools; but they are indolent, dirty, homely, and ignorant. They are widely scattered throughout Greenland and British America. As guides, they have been of great service to Arctic travellers. The Chinese have only recently come to this country from the vicinity of Hong Kong. They are not a fair representation of the Chinese people, being smaller and less intelligent than the more northern people. The Japanese are the most progressive of the Asiatic people of the present day. They are a race of keen thinkers, and their statesmen, soldiers, artists, and craftsmen are now famous the world over.

The American people, as a whole, are no smaller in size than the people of other grand divisions: they are as long-lived, and their beauty is as great. Dr. Brown-Sequard says, "The American man or beast is more enduring of wounds than the European." The faces of the Americans are as intelligent as those of Teutonic peoples. Americans are good fighters, as was shown in the civil war.

Population.

No country in the world has grown, in the number of its inhabitants, so rapidly as North America. In order that this may be better understood, the population of the United States for the last forty years is contrasted with that of Great Britain.

United States.	Great Britain.
1860	1861
31,000,000	29,000,000
1870	1871
39,000,000	32,000,000
1880	1881
50,000,000	35,000,000
1900	1901
76,000,000	42,000,000

The average increase is thus seen to be, in the United States, more in any one period than it has been in Great Britain during the forty years. What is the reason of this?

The population of North America in 1901 was, —

In Danish America, about	121,000
In Central America "	4,000,000
In British America "	10,000,000
In West Indies "	5,500,000
In Mexico "	13,600,000
In United States "	76,000,000
Total, about	100,000,000

which is more than twice that of South America, and more than one-fourth that of Europe. What proportion is in the United States? [Mexico has the same as —— and —— ?] Of the seventy-six millions in the United States, one-eighth are black, one-fourth are voters, one-sixth are foreign born, and one-eighth cannot write. There are one million more males than females in the United States; but in Massachusetts, Connecticut, New York, and Rhode Island, where the denser population is found, the females number many thousands more than the males.

The United States has fifteen million families, making an average of five persons to a family.

Males are in excess west of the Mississippi River, and north of the Ohio; females, east and south of these rivers. The foreign population is mostly north of the Missouri, Ohio, and Potomac rivers; the colored population, south of the same rivers.

The population in the United States is densest in the three States of Massachusetts, New Jersey, and Rhode Island, where the average is three hundred to a square mile. In the United States as a whole, the population averages only twenty-five to a square mile; in North America, twelve to a square mile; in the little island of Barbadoes, West Indies, the population equals one thousand persons to the square mile. Only one other country in the world is denser, namely, Malta. In Australia the population averages only one to a square mile.

One-sixth of the population live below 100 feet *above the sea-level.*

Two-fifths of the population live below 500 feet *above the sea-level.*

Three-fourths of the population live below 1,000 feet *above the sea-level.*

Ninety-seven per cent live below 2,000 feet *above the sea-level.*

Occupation.

[What does your geography say the occupations of North America are? Name them in the order of their importance.]

The *five* leading occupations, named in order of their importance, are the following: —

Agriculture, manufacturing, mining, fisheries, and grazing

Agriculture abounds in the . . . . { Atlantic Plain. / Central Plain. / California Basin.

It is carried on more or less in nearly all parts of the country.

In the *East*, in small farms; in the *South*, upon large plantations; in the *West*, upon large farms.

The prairie-lands of the West were prepared by nature all ready for ploughing, and the immediate production of grain. They now fill the markets of the world with flour at the cheapest possible rates. Almost a revolution in the world's agriculture has thus been produced.

The great difference between farm operations in the East and the West can only be understood by describing two great farms in the West. For that purpose we have selected one in California, and one in Dakota, — one a *fruit* farm; the other a *grain* farm.

A Noted California Farm. — Norato ranch, owned by Mr. De Long, is one of the most flourishing in California. It is located twenty-five miles north of San Francisco, on the Northern Pacific Railroad. The property comprises a fertile valley, and the hills or mountains which surround it. The size of the ranch is sixteen thousand acres, equal to a tract of land seven or eight miles long, and two or three wide, or to two-thirds of an ordinary town. It takes over one hundred and fifty men to run such a farm, with the help of fifty horses and mules and several engines. From twelve hundred to fourteen hundred cattle are kept, and seven hundred hogs, five hundred hens, three hundred pigeons, and plenty of dogs to hunt the wild game, which, including deer, abounds in this vicinity.

One thousand acres are devoted to raising grain, one thousand acres are kept for raising grass for the dairies and horses, and two thousand tons of hay are annually gathered. The ten dairies yield from five thousand to ten thousand pounds of butter each week. Horse-power is used for churning.

But this ranch is particularly famous for the quantity, quality, and elegance of the fruit grown thereon. There are at least forty thousand fruit-trees now growing on it. The visitor who should come to this

charming spot in the early springtime, when the hills are green in their new coat of verdure, and this mammoth orchard is in bloom, would be excusable in indulging in the most extravagant expression of rapture at the beautiful sight. Almost the entire valley seems turned into a magnificent bank of flowers; while the air is fairly heavy with their sweet perfume, reminding the delighted spectator of the "Vale of Cashmere," so eloquently described by Tom Moore.

This large orchard is divided as follows: one hundred and sixty acres of apple-trees, fifty acres of apricots, ten acres of Bartlett pears, fifteen acres of peaches, besides many acres of plums, crab-apples, figs, cherries, nectarines, English walnuts, almonds, etc.; while eighty acres are planted to vineyards of delicious grapes.

A Bonanza Farm. — Mr. Oliver Dalrymple has been at the head of the largest grain-farm in this country, containing seventy-five thousand acres, twenty-seven thousand of which were under cultivation in 1882. This huge farm is situated near Casselton in the eastern part of Dakota, in the valley of the Red River of the North.

A farm of this size is divided into smaller farms of about six thousand acres each, and placed under a superintendent, with book-keeper, headquarter's building, a storehouse for supplies, etc. The six thousand acres is sub-divided into three divisions of two thousand acres each, under the charge of a foreman. Each of these smaller farms has its own set of buildings, stables, granary, boarding-house, machine and blacksmith shop, all connected with the superintendent's office by telephone. Supplies, tools, and machinery are purchased at wholesale, and shipped by the carload. The profits in 1882 on the twenty-seven thousand acres of wheat were not less than two hundred and sixteen thousand dollars. The name "bonanza farming" seems to have been well given.

On this great farm four hundred men are employed in harvesting, six hundred in threshing; two hundred and fifty pairs of horses or mules are used, two hundred gang-ploughs, a hundred and fifteen self-binding reapers, and twenty steam-threshers.

The sight of the immense wheat-fields, stretching away farther than the eye can reach, in one unbroken sea of golden waves, is grand beyond description.

About the 1st of August the harvester is heard throughout the

length and breadth of the land. Each machine is drawn by three horses; and with each gang there is a superintendent, who rides along on horseback, and directs the work of the drivers. The long procession of reaping-machines move, one after the other, like so many batteries of artillery; a hundred of them cutting a swath one fifth of a mile in width. There are also mounted repairers, who carry with them the tools for repairing any break in the machines.

"Carleton" thus describes the scene, —

"Just think of a sea of wheat, containing twenty square miles, — thirteen thousand acres, — rich, ripe, golden, the winds rippling over it. As far as the eye can see, there is the same russet hue. Far away on the horizon you behold an army sweeping along in grand procession. Riding on to meet it, you see a major-general on horseback, — the superintendent; two brigadiers on horseback, — repairers, No swords flash in the sunlight, but their weapons are monkey-wrenches and hammers. No brass band, no drum-beat, nor shrill note of the fife; but the army moves on, — a solid phalanx of twenty-four self-binding reapers, — to the music of its own machinery. At one sweep, in a twinkling, a swath of a hundred and ninety-two feet has been cut and bound, the reapers tossing the bundles almost disdainfully into the air, each binder doing the work of six men." — p. 98, *Northern Pacific Railroad*, by H. J. WINSOR.

Facts in Reference to Agriculture.

There are said to be over four million farmers and planters in the United States of America, or nearly one-third of the adult males. The United States produces FOUR-FIFTHS of all the cotton raised in the world.

The chief agricultural productions, in the order of latitude, beginning at the north: —

GRAINS.	OTHER PLANTS.
Barley.	Potatoes.
Oats.	Hay.
Rye.	Hemp.
Wheat.	Tobacco.
Maize.	Cotton.
Rice.	Sugar.

Comparisons.

(1900.)

Illinois raised more corn and oats.
New York raised more hay and potatoes.
California raised more barley, wine, and grapes.
Kentucky raised the most tobacco.
Texas raised the most cotton.
Louisiana raised the most sugar.
South Carolina raised the most rice.
Texas raised the most stock.

Notice the sections giving the above facts in the maps and diagrams in Dodge's and King's Geographies.

[The teacher can make these more effective by showing the sections on the board with colored crayons.]

There were raised in the United States in 1902, 5,500,000,000 pounds of cotton. If each bale weigh 500 pounds, how many bales were there? Let the teacher give the size of a bale of cotton, and see how large a fortification so much cotton would make.

Manufacturing.

[Where carried on?]

In the East.

North of the Potomac and Ohio, because of the abundant *water power*. The South is now making nearly one-half the cotton cloth.

The leading manufacturing States in the United States, and north of these two rivers, are: —

(1) New York, (2) Pennsylvania, (3) Illinois, (4) Massachusetts, (5) Ohio, (6) New Jersey.

The following comprise the articles of greatest value manufactured in *North America* : —

Flouring and grist mill products, iron and steel, textiles, machinery, lumber, paper, printed matter, leather.

In order to make all these and other articles, it requires in the UNITED STATES alone, FIVE HUNDRED AND TWELVE THOUSAND manufacturing establishments, employing nearly FIVE MILLION hands, and making each year material worth over THIRTEEN BILLION DOLLARS.

Eight Principal Manufacturing Cities.

(1900.)

New York. Men's clothing, women's clothing, foundery products, liquor, furnishing goods, flour, coffee and spices.

Philadelphia. Textiles, worsted goods, foundery, printing, ship-building, iron and steel, leather.

Chicago. Meat-packing, men's clothing, iron and steel, foundery products, furniture, cars, liquors, confectionery.

Brooklyn. Sugar refining, foundery, meat-packing, coffee and spices, drugs, petroleum refining, glass, clothing and paints.

St. Louis. Liquors, tobacco, meat-packing, railroad cars, lumber.

Boston. Sugar, printed matter, men's clothing, leather, boots and shoes.

Pittsburg. Iron and steel, glass, foundery.

Cincinnati. Clothing, liquor, foundery, carriages, boots and shoes.

(The above cities are named in the order of the value of their manufactured goods. Further facts about manufactures are given under Productions, p. 29)

Mining.

[Where? What?]

Location. — Mostly in the Highland Region.

In the *Eastern Highlands* are found extensive mines of *coal* and *iron*. In Eastern Pennsylvania abound mines of hard coal (Mauch Chunk and Scranton) ; Western Pennsylvania, soft coal and iron (Pittsburg).

[From what city would you ship a cargo of hard coal to Boston?]

In the *Western Highlands* are found numerous mines of silver and gold. Silver-mines are frequently seen in the plateau-region of the United States, as in Colorado, Nevada, Utah, and Arizona, and in Mexico, north of the capital. Gold is found all through the Western Highlands, but especially in the Sierra Nevada.

Gold. — The placers which contain gold in its native state, mixed with sand and gravel, are the richest and most profitable sources of the metal. The first discoveries of a gold-mining region are naturally of this class, but they are rapidly exhausted. Alder Gulch, in Montana, has produced more than $30,000,000. In Colorado, the gold is found with copper and iron pyrites; in Nevada, with silver.

In California the gold is free, and at first it was separated from the dirt by a pan and rocker. Then a trough was used, and then a sluice, through which a stream of water was constantly running. In time came hydraulic mining, by which an enormous and powerful stream of water was directed, under great pressure, against a bank or hillside containing placer-gold. The earth thus torn down was carried by the water into the sluice, and the expense of shovelling saved. This method of mining destroyed the beauty of the country, and filled up the rivers to such an extent that the Legislature has forbidden it. Now quartz-mining is the one usually employed. The rock is pulverized by heavy machinery, and the gold separated by the help of mercury or sulphurets. This method of mining requires capital and education, and reduces gold and silver mining to regular business enterprises.

The rush, excitement, and lawlessness which followed the accidental discovery of gold in California, in 1848, by James Marshall, have been repeated in the Black Hills, in Leadville, and in the Klondike.

Silver. — Silver is as widely distributed in the Western Highlands as gold. Colorado, Montana, Nevada, Utah, and Arizona are at present the principal silver-producing States. The first named pro-

duces about one-third. The Comstock Lode at Virginia City, Nev., is the richest deposit of silver in the world. In one year, $23,000,000 in gold and silver were taken from this lode. A tunnel twenty thousand feet long, and costing nearly $5,000,000, has been carried into the side of the mountain containing this silver deposit, in order to drain and ventilate the mine better, and also as an easier exit for the ore than the shaft.

[See *Compendium of North America*, p. 154.]

Lead and copper are found in the largest quantities in the valley of the upper Mississippi. Copper-mines abound in and about Lake Superior. [What island celebrated for copper-mines?]

Many valuable metals and minerals are found in the mountains of North Carolina.

Nearly every metal of any value has been found in great abundance in this country except tin. [Where do we get our tin?]

Grazing.

This business is now carried on in Texas, Iowa, Kansas, Nebraska, Illinois, and Colorado. Many of the large ranches are owned by great cattle-companies of the East or Europe. Millions of dollars from England and Scotland have been invested in these Western cattle-companies. Some companies own as many as a hundred thousand cattle.

In these high latitudes, the grass cures on the stem, so very little feeding is necessary. Shelter is rarely provided. When a blizzard rages, the cattle huddle close together: the strongest push to the centre, and the weakest are crowded to the outside, where many of them freeze to death.

Most of these great ranches are on Government land, and some of them have been "run" by New-England young

men. In Kansas the cattle-men are obliged to own their own land. A ranch near Emporia contains thirty thousand acres, well fenced with wire, and divided into convenient sections. The cattle are kept in "bunches" of about one hundred and twenty-five, for better care and health.

When the cattle are ready for market, they are driven to the nearest railroad, and loaded on the cars, about eighteen being put into a car. The railroads are now obliged by law to water them, and at long intervals to take them out, and rest and feed them. The trains move as much as possible in the night. Many of these cattle are slaughtered in Chicago, and the beef sent farther east in refrigerator-cars.

From that interesting book on this subject, entitled "Ranch Notes," by R. Aldridge, London, the following extract is taken: —

"The work of taking care of cattle was not severe. We got up generally about sunrise, and, after a hasty breakfast, saddled our horses, and went round the cattle, counting them as we passed along. If any had wandered too far, we drove them back. At four P.M. we rode out again, and quietly worked the cattle towards home. After sundown we rounded them up close to the shanty, and held them there till they began to lie down; after which we went in to supper, and 'turned in' pretty early."

"Sometimes a few of our cattle would stray away, and give us some trouble to discover them. When this happened, we usually found them in one of the neighboring herds, of which there were three within a radius of five miles.

[In the above book will be found interesting accounts of "round-ups," "branding," and the pleasant side of a cowboy's life. See, also, finely illustrated article in *World's Work*, February, 1906.]

Fishing.

Cold-water seas are necessary to the life of the three leading commercial food-fishes; viz., the cod, herring, and the mackerel. The Arctic Current, which washes the coast of Labrador, Newfoundland, Canada, and a part of the United States, is the source of the vast fishing wealth of this part of the world. As the farmer depends upon the rain and sun for his crops, so do the fishermen depend upon this Arctic Current for a never-failing supply of fish.

This Arctic, or Labrador, Current brings with it, to these fishing and spawning grounds, the *food* on which the fish thrive; and the supply never fails. This food consists of a kind of slime, made up of minute marine life, "diatoms" as they are called, found most abundant in the coldest water, or near the neighborhood of icebergs.

Minute creatures (crustaceans, such as the crab, cray-fish, shrimp, etc.) feed upon this slime, and become, in turn, food for the herring, which are devoured by the cod.

The Great Banks, directly south of Newfoundland, form a regular sub-marine plateau. Here the water varies from fifty feet to three hundred and fifty feet. At the west end of the Banks the water suddenly becomes about nine thousand feet deep. These fishing-grounds extend two hundred miles in length, and about seventy in breadth. Ever since Cabot discovered this coast, these "cod meadows" have been fished by all the nations of the world, without showing any decrease in productiveness.

The sections of North America engaged in the fishing business are named in order, — Canada, New-England States,

South-Atlantic States, Middle States, Pacific States and Territories, and the Great Lakes.

The different kinds of fishing are, whale-fishing in Arctic seas; cod, herring, and mackerel, on the Banks; oyster-fishing on the coast of Maryland, Virginia, New Jersey, and Rhode Island; lobster-fishing along the New-England coast; seal-fishing on the St. Paul Islands, Alaska; salmon-fishing, Columbia River, Oregon; white-fishing in the Great Lakes.

Canada caught, in 1902, four million one hundred thousand dollars' worth of cod.

The amount caught in a year in the United States, of the different kinds of fish, is estimated to be worth a hundred million dollars. To do this business requires a hundred and forty thousand men, and about seven thousand vessels.

The New-England States employ forty thousand men and twenty-two hundred vessels, and they obtain about fifteen million dollars' worth of fish in a single year. The principal places engaged in the work in this part of the country are the following, named according to the value of the "catch:" Gloucester, Boston, New Bedford, Eastport, Provincetown, and Portland.

The South-Atlantic States employ more men, but do not obtain so much fish by one-third.

Language.

The largest proportion of the people in this country speak the English language. There is, however, considerable difference between the pronunciation and use of words in the various sections.

The standard is found in Webster's, Worcester's, and the Century's dictionaries.

Lippincott's Gazetteer is considered the standard for *geographical* names. Teachers ought not to expect children to be very critical about the pronunciation of difficult geographical names.

There are many Germans in the West, and in some cities the German language has been taught in the public schools.

In parts of Canada and Louisiana a kind of French prevails. In Mexico and the West Indies, Spanish is the prevailing tongue.

The ten million American Indians in North and South America are said to speak two thousand dialects, — as many dialects as there are in the nine hundred million in Asia and Europe.

Although Alaska belongs to the United States, only one-eighteenth of the people speak English; and these are all found in three settlements.

Manners and Customs.

[Manners and customs must be gathered largely from travel, and books on travel. A pleasant way to develop this with a class is to divide the blackboard into four spaces. Head two adjacent columns with some nations or peoples as different as possible, the pupils to do the same on paper; and then fill in the peculiarities as fast as facts are gathered. The teacher to help only when the class are exhausted. Illustrations of this method follow.]

INDIANS.	ESQUIMAUX.
Their manners differ in different tribes.	Not numerous in North America.
They receive such names as Big Crow, Whirlwind, Arrow Head, Laughing Water, etc.	Houses small, built of stone and turf. Lighted and heated by a lamp.
They have much imagination.	The house is cleaned in spring by removing the roof, and moving away while the rains of summer wash it.
They bury in trees, sitting posture. They frequently move. The women do the hard work. The	

older and uglier the woman, the more work laid upon her.

Dress in skins; children naked. Indians eat meat raw; like the marrow.

Very superstitious.

Easily surprised, yet often stolid. Indifferent to pain.

YANKEES.

Live in New England.

Descended from the Puritans.

Sharp-faced, angular, tall, and thin.

Hard-working, close, economical, self-possessed.

Believe in the common school and college. Generally intelligent. Very *inventive*, mechanical, shrewd.

They have good roads; build houses of wood, and keep them painted. Cities clean; streets crooked. Thanksgiving turkey and baked beans.

Keep Sunday.

Small farms.

ALASKA.

Natives are Indians and Esquimaux. Indians on the Yukon River called Innuits. Natives on the western islands called Aleuts. Houses low, square hole in top. Enter on hands and knees. Clothes made of dressed deerskin. Travel with dogs and sleds. Can make birch canoes twelve feet long.

He still catches the seal with harpoon and bladder. The women do most of the domestic work. Men and women dress very nearly alike.

He calls his long boat a kyak.

Keeps many dogs.

WESTERNERS.

Descended from New England and Europe by immigration.

Large, pleasant face, open, fair, generous.

They are social, good-natured, patriotic. Boastful sometimes. Have large ideas. *Full* of *business*. Carry it on in a large way. Not so particular about little things.

Cities laid out with wide and straight streets.

"Rushing" in their business. Always pushing and active.

Continental Sunday.

Ranches.

Large farms.

MEXICO.

People consist of Indians, Creoles, Mestizo (white father and Indian mother). Indians of medium height, stout; wear simple dress, no shoes. House, adobe; mats of rushes or palm-leaves for seats. Food, vegetables and fruits. Great gamblers, and very lazy.

Place before their houses the "totem pole."

Indians are dirty and lazy.

Live largely on fish, berries.

They are treacherous, untruthful. Do not farm, because there is no level land.

They are not acquainted with domestic animals. There are only four horses in the country.

When a servant is hired, the rest of the family live with him.

Assassinations are common. Nearly all the men and women smoke.

Canada.

People mostly English or French.

The Canadians are fine, tall, handsome, powerful men. The girls are robust, strong, with red cheeks.

All enjoy winter sports, such as tobogganing, skating, sleighing, curling, lacrosse, etc. At Montreal there is a week of these sports called the Carnival.

Men and women dress in furs, and costumes of bright colors, and thick flannels.

West Indies.

Negroes, Creoles, and Spaniards are the principal people.

Labor cheap. Food cheap. Land and rent cheap.

Houses small and poor. Hammocks instead of beds. Walls of houses gayly colored; sometimes made of glutinous earth, which hardens.

People rise at six, take a cup of chocolate and fruit; breakfast at twelve, then the *siesta*. Work from two to four; dinner at six.

Sunday is a *fête* day.

[The teacher can now read with profit to the class, or have them read to him, from Frances Parkman's *Oregon Trail*, chap. xviii. p. 251, A Mountain Hunt.]

Education.

In considering this subject, we only need to speak of Canada and the United States, as little attention is paid to education in other parts of the continent.

Canada.

There is a complete system of elementary education here, free to all, and supported by, and under the control of, each separate province. Ontario is said to have the best schools. One-third of the teachers are men. The average attendance of the pupils is poor, and the pay of the teachers low.

United States.

In the United States, as in Canada, the separate States control the public-school systems. The United States has only two schools; viz., the military academy at West Point, and the naval academy at Annapolis. The systems in the different States differ mostly in details. In every State, instruction is provided free of cost to all children during school age. The State has some general oversight; but the cities and towns look after the expenses for education, and have control of the teachers, through superintendents and boards of education.

Not only are there many primary and grammar schools, but the high schools and colleges are well patronized. In these high schools the poor boy can prepare for college, and in some States he can go through college without paying any tuition. Many States also provide text-books and stationery free of cost. If a boy or girl wishes to become a teacher, he can attend the State or city Normal School, and learn the business of education.

Numerous conventions and associations of teachers and educators, county institutes, and summer schools are held, especially during the summer vacation, for the purpose of improving the education of the youth. At these meetings

experienced teachers lecture and read papers on this subject. At one of these meetings recently held in Chicago, fifteen thousand teachers are said to have been present.

The United States Commissioner of Education reports in the country seventeen million children enrolled in the different schools taught by four hundred and forty thousand teachers, at a total expense for salaries, fuel, and official service, of two hundred and thirty-five million dollars.

Some of the noted colleges are Harvard, Yale, Dartmouth, Amherst, Williams, Brown, Bowdoin, Columbia, Cornell, Johns Hopkins, Boston University, Princeton, Wesleyan University, University of Michigan, University of Ohio, University of Minnesota, Washington University, etc. Most of these are for men.

Vassar, Wellesley, Smith, Bryn Mawr, and Radcliffe, are some of the colleges for women.

[Where are these colleges situated?]

The people of the United States are great readers of papers, magazines, and books. This is shown by the fact that about ten thousand papers are now published in this country, some of them printing three hundred thousand copies a day; and some magazines run off a single edition of two hundred thousand numbers.

The noted poets, historians, critics, and novelists of this country are now read the world over. Reference is made to such men as Longfellow, Lowell, Whittier, Holmes, and Bryant; Bancroft, Motley, and Prescott; Emerson, Irving, Whipple, and Stedman; Cooper, Hawthorne, Mrs. Stowe, Mrs. Howe, and Mrs. Jackson.

To show the interest taken here in science and invention, it is only necessary to mention such names as Franklin,

Agassiz, Silliman, Dana, Henry, Youmans, Young, Morse, Fulton, Whitney, Hoe, Bell, and Edison.

[What ideas are suggested by these names?]

Religion.

In Mexico, Central America, West Indies, and some parts of Canada, the Catholic religion prevails.

In the United States perfect religious toleration is allowed, and hence various denominations are found side by side.

No religious instruction is allowed in the public schools.

Some of the leading denominations are given below: —

Baptist.	Lutheran.
Catholic.	Methodist.
Christian.	Mormon.
Christian Science.	Presbyterian.
Congregational.	Unitarian.
Episcopal.	Universalist.

There are over forty different denominations in the United States. (See Dr. Dorchester's *Recent Statistics*.)

Government.

Most of the different forms of government are representative in North America (and in South America also), rather than hereditary.

Danish America consists of Greenland and Iceland, both colonies of Denmark, and under the control of Danish governors. One of the governors lives in simplicity at

Lichtenfels; the other at Reikiavik, the principal town in Iceland.

In the Dominion of Canada, the executive authority is vested in the Governor-General, appointed by the British sovereign. A Parliament, composed of a Senate and House of Commons, makes the laws. The senators are appointed instead of elected. Each province has a legislature.

[See picture of Parliament House, Ottawa, in *King's Geography*, p. 157.]

The Government of the *United States* is a Federal Republic, deriving its power from the Constitution adopted in 1788.

There are, according to this document, three branches of the Government: the Legislative, which makes the laws; the Judicial, which interprets the laws; the Executive, which sees that the laws are obeyed.

The laws of the country are made by Congress, which meets in Washington every December. The senators are chosen by the State legislature for a term of six years. There are ninety senators in the Senate. The Vice-President of the United States is the presiding officer.

The representatives are elected directly by the people for two years. Each State is entitled to one for every one hundred and ninety-four thousand of its inhabitants, so there are now three hundred and eighty-six representatives; New York having thirty-seven, the largest number of any one State. Then come in order, Pennsylvania, Illinois, Ohio, Missouri, and Texas.

The President is the highest officer in the country, often called the "Chief Executive." He is elected every four years, by *electors* chosen by the people. He resides in the *White House* at Washington.

His salary is fifty thousand dollars a year. The Vice-President receives eight thousand dollars; each senator and representative five thousand dollars each, and twenty per cent mileage.

For a more extended consideration of this subject, see *King's Geography*, p. 36; *Analysis of Civil Government*, by Townsend; *Civil Government*, by James; by Mowry.

Mexico is a republic of twenty-seven States, and the territory of Lower California. The form of government was modelled after that of the United States.

Cuba is now an independent republic under the fostering care of the United States.

Suggestive Questions.

1. For what is North America now noted?
2. How much has it grown during the last ten years?
3. What are the great wheat States? cotton States? lumber section?
4. What section is the oldest? the largest? the richest? the most populous?
5. From what city in North America do the largest number of trains daily leave?
6. What cities are noted cotton marts? grain marts? woollen marts?
7. What is the metropolis of each section of North America?
8. From what is sugar made? starch? flour? salt? ribbons? collars? matches? paper? ink?
9. Are the people of North America great readers?
10. Are they lovers of music? art? athletics? money? education?

CHAPTER XV

WHAT TO TEACH ON NORTH AMERICA, Concluded

THE original source of wealth is the bounty of God in nature. — *Dr. Francis Wayland.*

THE fertility of the soil of North America; its position, in the midst of the oceans, between the extremes of Europe and Asia, facilitating commerce with these worlds; the proximity of the rich tropical countries of Central and South America, towards which, as by a natural descent, it is borne by the waters of the Misissippi, and of its thousand tributaries' streams, — all these advantages seem to promise its labor and activity a prosperity without example — *A Guyot.*

BOOKS FOR CONSULTATION

Benjamin's Atlantic Islands. *Illustrated.*
Census Reports, 1900–1907.
Conkling's Mexico.
Dodge's Indian Traits.
Froude's West Indies.
Gooch's Mexico.
Greene's American Forestry.
Hill's Cuba.
King's Great South. *Illustrated.*
Lamb's Homes of America. *Illustrated.*
Lorne's Canadian Pictures. *Illustrated.*
Manning's American Pictures. *Illustrated.*
Marshall's Through America. *Illustrated.*
Moore's Picturesque Washington.
Mowry's Studies in Civil Government.
Niagara. *Illustrated.*
Nash's Oregon.
Parkman's Oregon Trail.
Picturesque America. *Illustrated.*
Smalley's Northern Pacific.
Redway's Commercial Geography.
Williams's America. *Illustrated.*
Winser's Northern Pacific Railroad.

CHAPTER XV

WHAT TO TEACH ON NORTH AMERICA, Concluded

PRODUCTIONS: IN GREENLAND — IN ICELAND — IN CANADA — IN THE UNITED STATES. — AGRICULTURAL PRODUCTIONS — MANUFACTURING PRODUCTIONS — MINING PRODUCTIONS — IN MEXICO — IN THE WEST INDIES — COMMERCE — EXPORTS — CANADA EXPORTS AND IMPORTS — THE UNITED-STATES EXPORTS — THE UNITED-STATES IMPORTS — MEXICO — THE WEST INDIES — REPRESENTATIVE CITIES: UPERNAVIK — SITKA — CHICAGO — WASHINGTON — NEW ORLEANS — MEXICO. — JOURNEYS — COMPARISONS

X. PRODUCTIONS OF NORTH AMERICA

As North America stretches through every zone, and has, on account of its variety of latitude, its elevations, surrounding currents, and the directions of its great mountain ranges, all possible varieties of climate, and as here man is found of every degree of civilization and savageness, so the productions of the country are equally varied and wonderful.

The word "productions" is used in a broad sense, meaning to include whatever is produced by the different leading occupations.

[The productions should be mentioned, as far as possible, in some order, as according to value or locality. These productions are easily learned by printing them on the progressive map in red ink (if an upper class), placing the names in the localities where they are most abundant. (See p. 123.) Such maps are found in **Dodge's, King's, Harper's, and McNally's geographies.**

Heath & Co. of Boston publish outline-maps of North America, United States, and sections of the same, which save much time and trouble in preparing progressive or production maps.

Many facts are here given which would only be read or given orally to the class. A few of the bright minds will readily remember the statements. *Do not require your children to learn, or commit to memory, all herein stated.*]

Productions in Greenland.

The people are able in the southern part of this land to raise, during the very short summer, a little corn, potatoes, and kitchen-sauce. A few berries also grow. Seal-furs, eider-down, oil, and fish and fish-products are the principal productions; also cryolite, used in making porcelain.

In Iceland.

Wool, eider-down, Iceland moss, hay, cattle, sheep, and fish.

There are no trees of any size, nor any reptiles, found at present on the island.

In Canada, or British America.

Gold is found along the banks of the Frazer River, in Columbia.

Lumber abounds in the great forests stretching across the country on both sides of the 50th parallel.

Cereals grow on the alluvial valleys by the Red River of the North, and the level plains of the St. Lawrence.

Soft coal comes from Nova Scotia.

The fur-trade gives occupation to many men in the far North.

One of the most valuable productions is fish, caught near the shores, and on the Grand Banks. Cod ($4,100,000 worth in one year), herring ($2,000,000 worth yearly), lobster, salmon, mackerel, trout, in order of value.

In the United States.

In this country, the variety of climate, the richness of the soil, and the energies of the people, all combine to develop such a variety of productions, it is well to speak of them under different headings, according to value, as, —

1. Agricultural Productions.

Cotton. Texas, Mississippi, Georgia, Alabama.
Wheat. North and South Dakota, California, Minnesota, Ohio, Kansas.
Corn and Oats. Illinois, Iowa, Kansas.
Hay and Potatoes. New York, Iowa.
Tobacco. Kentucky, Virginia, North Carolina.
Sugar. Louisiana.
Rice. South Carolina.
Wine. California.
Live Stock. Texas.
Peaches. New Jersey, California.
Oranges. Florida, California.
Peanuts. Virginia, Tennessee.

Virginia produces 1,250,000 bushels, and Tennessee 600,000 bushels, of peanuts in a year. The average price is one dollar per bushel.

The United States raises three-fifths of all the cotton raised in the world. She raised, in 1902, 2,600,000,000 bushels of corn, nearly one-fourth as much wheat, and less than one-third as much oats.

If a freight-train could carry 100,000 bushels at one time, how many trains would it take to move all this grain?

2. Manufactured Products.

These are taken from the last census report, and the States are arranged according to the value of the products. It will be readily noticed that most of the manufacturing is carried on north of the Potomac and Ohio rivers.

[Require the pupils to learn only seven or eight of these, taking those of greatest importance or nearest your residence.]

Boots and Shoes. Massachusetts, New York, New Hampshire, Pennsylvania.
Clothing (men's). New York, Pennsylvania, Ohio, Maryland, Massachusetts.

Clothing (women's). New York, Pennsylvania, Illinois.

Cotton Goods. Massachusetts, South Carolina, North Carolina, Rhode Island, Pennsylvania, New Hampshire, Georgia, Connecticut, Maine, New York, Alabama.

Foundry and Machine-shop Products. New York, Pennsylvania, Massachusetts, Illinois, Connecticut.

Hardware. Connecticut.

Jewelry. Rhode Island, New York, Massachusetts, New Jersey.

Leather. Pennsylvania, New York, Massachusetts, Wisconsin.

Linen. New York, Maine, Pennsylvania, Illinois.

Liquors (distilled). Illinois, Kentucky, Ohio.

Liquors (malt). New York, Pennsylvania, Illinois, Massachusetts.

Liquors (vinous). California, Ohio.

Lumber (planed). New York, Illinois, Pennsylvania.

Lumber (sawed). Michigan, Pennsylvania, Wisconsin, New York.

Marble. New York, Pennsylvania, Massachusetts, Ohio.

Mixed Textiles. Pennsylvania, New York, Massachusetts.

Printing and Publishing. New York, Pennsylvania, Massachusetts, Illinois.

Rubber Goods. Massachusetts.

Salt. New York, Michigan.

Ship-building. New York, Pennsylvania.

Silk. New Jersey, Pennsylvania, New York, Connecticut.

Slaughtering. Illinois, Kansas, Nebraska, Indiana, Missouri.

Woollen Goods. Massachusetts, Pennsylvania, Connecticut, Rhode Island.

3. Mining Products.

The precious metals are mined in the Pacific Highlands; iron and coal, in the Atlantic Highlands, and *between* the two highlands mentioned, especially in the northern half of the Central Plain.

For methods of mining, see p. 311.

[Teachers can easily show the locality to the eye, by writing or printing these names upon the outline-map. Pupils learn the same by printing them.]

Silver. Colorado ($29,000,000), Montana ($11,000,000), California, Arizona.

Gold. California ($16,000,000), Alaska, Colorado, Montana.

Coal (hard). Pennsylvania.
Coal (soft). Pennsylvania, Illinois, West Virginia, Ohio.
Iron. Michigan, Minnesota, Alabama, Pennsylvania.
Copper. Michigan, Arizona, Vermont, North Carolina, Montana.
Lead. Missouri, Virginia, Kansas.
Quicksilver. California.
Zinc. Missouri, New Jersey, Pennsylvania, Kansas.
Nickel. Canada, Michigan.

In Mexico

the people live at all elevations, from the level of the sea to that of the plains of Orizaba, from seven thousand to eight thousand feet. This fact, and the latitude of the country, give it a great variety of climate, and a remarkable range of productions.

In a trip from Vera Cruz to the City of Mexico, the traveller would begin his journey in the hot lands, where grow such tropical fruits as bananas, oranges, and mangoes and cocoa-palms wave their long leaves in the wind.

Rising higher, he would soon enter the *Temperate Region*, where, at the height of three or four thousand feet, sugar-cane, rice, tobacco, plaintain, and coffee are grown with ease and abundance. Corn, apples, and peaches abound in this belt.

In the cold country, or Plains of Mexico, wheat, barley, and aloes are raised. As we approach the capital we find the cactus, argave, and maguey, from which pulque, the famous Mexican drink, is obtained. Cotton, wheat, and the argave grow abundantly about the capital. Grains flourish best in the southern and eastern part of the state. Sugar is produced principally about Vera Cruz; various kinds of hemp, in Yucatan. Spanish pepper is largely raised and used.

The noted silver-mines are situated in the central part, from fifty to a hundred miles north of the City of Mexico, and in Sonoro, a section in the extreme north-west.

The productions, in order of value, are as follows: corn, silver,[1] wheat, sugar, frijoles (beans), gold, cotton, barley, pepper, woods, coffee, rice, hides, vanilla, tobacco, rubber, orchil, copper, sulphur, honey, horsehair, sarsaparilla.

In the West Indies.

The climate is favorable for every variety of tropical growth; the soil rich; and man alone is lazy, inefficient, and easily satisfied. Little exertion is necessary to keep from starving to death, hence little enterprise is shown in any of these beautiful islands.

Few minerals are found: and the productions are almost entirely vegetable, such as sugar, molasses, tobacco, cigars, coffee; tropical fruits, such as cocoanuts, bananas, pine-apples, oranges, and breadfruit; mahogany (Bahamas), indigo, logwood (Hayti); a few spices, sponges, honey.

Two hundred million cigars were made in Havana in the year 1903. Several millions were sent to United States. In 1905 the United States imported from Cuba tobacco worth about $15,000,000.

The tobacco raised in a single year is valued at twenty million dollars. The tobacco-plant is shaded by the banana-plant, and the coffee-tree by the cocoa-palm.

One-tenth of the sugar consumed in the world is raised in Cuba, but only one-tenth of the land is cultivated.

[These productions can be dictated to the class, put on the board, or, better, lists made by the pupils, corrected in the classroom, and then printed on the progressive map as

[1] *Hemp* should come next.

given in the Progressive Map, Fig. 17. The productions have been given according to value, but it is important that a few comparisons be made to impress these facts upon the memory of the children. This can be easily done by putting on the board a few circles divided into different sized sectors, such as follow.]

XI. COMMERCE

The great commercial grand divisions of the world are Europe and North America.

If the important countries are arranged according to the amount of shipping, both sailing and steam, the countries appear in the following order: —

Great Britain.
United States.
Germany.
Norway.
France.
Italy.

[The subject of commerce has been so fully illustrated, and so much space already given to the commerce of the United States, the reader is referred for interesting facts to chaps. xvi. and xvii.]

Exports of North America.

The exports are principally from agriculture. We export considerable manufactured goods, but we import still more. Most articles imported into the United States pay high duties, excepting coffee, tea, fruit, India-rubber, rags, and raw silk.

The exports and imports are here given, in order of their value, according to the latest United-States Government statistics. This order will vary slightly from year to year, but the last mentioned will never become the first mentioned

without many years intervening. Such changes have, however, taken place during a period of twenty-five years in India and Mexico.

Canada Exports

From Montreal, to England and United States, *animals*, *lumber*, *bacon*, *wheat*, *wood pulp*, *fish*, and *furs*.

From Quebec, to England and United States, *lumber*.

From Halifax and St. John's, to England and United States, *fish*.

From Halifax and British Columbia, to United States, *soft coal*.

Canada Imports

From England, *cotton* and *woolen goods*, *iron* and *steel*.

From the United States, *flour* and *coal*, *iron* and *steel*, *oil*, *tobacco*.

The United States Exports

Cotton (raw) to England, Germany, France, Italy, and Spain, from New Orleans, Galveston, Savannah, New York, Wilmington, Baltimore, and Boston.

Gold and *silver* to England, Hong Kong, Italy, Canada, and France, from New York and San Francisco.

(Some of this is carried in American steamers, but the larger part in foreign steamers.)

Breadstuffs to England, Netherlands, Japan, Hong Kong, S. Africa, and Cuba, from Chicago, *via* New York, *via* San Francisco, *via* Boston, *via* Philadelphia, *via* New Orleans, and *via* Baltimore.

Petroleum to England, Germany, East Indies, China, Japan, and Australia, from New York, Philadelphia, Baltimore, and Boston.

Pork to England, Germany, Belgium, and Canada, from Chicago and Cincinnati, *via* New York, Boston, and Philadelphia.

Lard to England, Germany, France, Cuba, Belgium, and Netherlands, from New York and Boston.

Animals to England and Cuba from New York, Boston, Baltimore, Portland, and Galveston (Tex.).

Tobacco to England, Germany, Italy, Belgium, from New York, Baltimore, Boston, New Orleans, and Galveston.

Timber to England, Canada, Australia, Cuba, from New York, Puget Sound, Minnesota (Minn.), Pensacola (Fla.), and Brunswick (Ga.).

Agricultural Implements to France, Russia, Argentina, Germany, Spain, and Canada, from New York and Philadelphia.

Cars to Mexico, Canada, and United States of Colombia, from New York.

Manufactures of *iron* and *steel* to Canada, Argentina, Mexico, Japan, England, and Australia, from New York, Cuyahoga, and Oswegotchie.

Leather to England and Germany, from New York and Boston.

Beef to England, from New York and Boston.

The value of the domestic merchandise exported in one year amounts to nearly one billion dollars, one-half of which goes to Great Britain. New-York City exports more than one-half of this amount.

[The teacher should not expect the child to learn all the following statistics; but rather let the teacher write on the board selections therefrom, omitting some facts, such as the right order of value, the locality, etc., and allow the children to try to fill in the missing fact, restore the order, etc. The teacher, for instance, places on the board the facts in reference to the United States importing sugar, and asks the class to trace the probable route by which the cargoes were brought. Or the teacher asks, "By what route is cotton carried from the United States to England?" "Under what flag would agricultural implements be exported from New York to Australia?"]

The United States Imports

Sugar from Cuba, other parts of West Indies, Spanish possessions, Guiana, and Brazil, through New York, Boston, Philadelphia, Portland, and San Francisco.

Textiles (cotton and woollen), from Great Britain, France, Germany, through New York, Chicago, and Philadelphia.

Coffee from Brazil, Venezuela, Central America, Java, Hayti, Colombia, Mexico, and West Indies.

Silk (manufactured) from France, Switzerland, and Japan, through New York, Philadelphia, and San Francisco.

Silk (raw) from Japan, China, and Italy, through San Francisco and New York.

Hides from England, Argentine Republic, Uruguay, East Indies, Mexico, Colombia, Canada, and France, through New York, Boston, and San Francisco.

Tea from China, Japan, through New York, San Francisco, Chicago.

India Rubber from Brazil, England, Belgium, Colombia, and Portugal, through New York and Boston.

Linen (manufactured) from Great Britain and Germany, through New York and Boston.

Tobacco from Cuba and Netherlands, through New York, Key West, and Tampa.

Tin from England and East Indies, through New York, Philadelphia, Baltimore, and San Francisco.

Spices from East Indies, England, and Africa, through New York, Boston, and San Francisco.

Wine from France, England, and Germany, through New York and Boston.

Rice from England, China, and Japan, through San Francisco and New York.

Salt from England, West Indies, and Canada, through New York and Boston.

Mexico Exports

From Vera Cruz and other seaports, to England, *silver*, *mahogany*.

From Vera Cruz, to United States, *sisal grass*, *coffee*, *goat-skins*, *dry hides*, *copper ore*, and *lead ore*.

From Paso del Norte, to United States, *silver*, *goat-skins*, and *animals*.

From Merida, Yucatan, to United States, *hennequen fibre*.

Other exports to United States, are vanilla, tobacco, sugar, honey, beans, orchil, woods, horsehair, sarsaparilla.

Mexico Imports

From the United States and England, *textiles*, *chemicals*, *machinery*, *cotton*, and *iron wares*.

The West Indies Export

From Havana, to United States and England, *sugar*, *cigars*, *tobacco*, *molasses*, *mahogany*, *logwood*, *fruit*, *sponges*.

From Matanzas, Cardenas, and Cienfugos, Cuba, to United States, *sugar*, *molasses*, and *honey*.

From Kingston (Jamaica) and Port Antonio, to United States, *coffee*, *sugar*, *bananas*, and *oranges*.

XII. A FEW REPRESENTATIVE CITIES OF NORTH AMERICA

[Let the children prepare, in upper class, a little description of the characteristic places in the country, which description may be considered as a composition. Below we give a few illustrative accounts, to show our meaning. Facts briefly stated should here be required, rather than fine writing.]

Upernavik, Greenland. — Latitude, 72° N. Population, in 1870, was 88.

Name means "Place of Spring."

Most northern place in North America.

Situated on an island, facing the sea; exposed to icy winds and fogs.

It has a very desolate and dreary appearance. Large heaps of snow near by, even in July.

A little vegetation grows in the gardens near the houses. There is a small church, twenty-five feet by sixteen feet, also a comfortable house for the missionary. In winter the sun for seventy-nine days is below the horizon. For thirty-nine days it is very dark.

Sitka, Alaska. — Latitude, 57° N. Population (1900), 1,390.

Situated on Baranoff Islands. It has a small harbor. Mountains rise near by.

The place has a custom house, a hospital, saw-mills, also a Greco-Russian church, and an experiment station.

A steamboat plies every two weeks between this place and Portland, Ore.

The business is mining and the catching and curing of salmon.

Sitka has also a United States Magnetic Observatory and Training School. More rain falls here than in any other place outside of the tropics.

Warmer than Boston on account of the Japan Current.

Chicago. — Population in 1905, 1,960,000. Much larger than Philadelphia, thrice as large as St. Louis. Three times the size of Boston.

Situated on the Great Lakes, thus connecting with the St. Lawrence River and Erie Canal, and near the Mississippi River. Largest commercial city, for these reasons, in the interior. Greatest railroad centre in this country, if not in the world. Twenty-two railroads enter the city.

Greatest grain and lumber market. Immense "cattle-yards," where beeves, hogs, and lambs are slaughtered in the most scientific manner. Much of this meat is sent in refrigerator-cars to New York, Philadelphia, Boston, and other places.

Excellent water-supply brought by a tunnel several miles long, from the bottom of Lake Michigan.

Chicago is a commercial emporium with the North-West.

It has wide and straight streets, miles and miles of business blocks; many buildings from eleven to twenty stories high. A large number of elevators are seen in the city. There are several large depots, a fine post-office and custom-house, court-house, board of trade, immense hotels, many churches, schools, the University of Chicago, etc.

There is a system of public parks connected, with *boulevards*, which will be magnificent when completed. Lincoln Park already shows some fine efforts in English landscape-gardening.

Chicago has had an unparalleled growth. In 1837 it contained four thousand people; in 1850, thirty thousand; in 1860, a hundred and twelve thousand; 1870, three hundred thousand. (See p. 337.)

The next year (1871) it had a fire, which proved to be the greatest in modern times. Two thousand acres on both sides of the river, along the lake, were burned over, destroying over seventeen thousand buildings, rendering homeless a hundred thousand people. In three years this was all rebuilt.

Chicago has now the largest rolling-mill in the world, the largest steel-mill, and makes nearly all of its own boots and shoes.

Comparisons.

BOSTON.	CHICAGO.
Two hundred and fifty years old.	Seventy years old.
450,000.	Nearly 2,000,000.
Twice as slow.	Four times as large.
Situated on salt water.	On fresh water.
Seaport.	Inland port.
Narrow streets.	Wide streets.
Crooked streets.	Straight streets.
Not level.	Perfectly level.
Culture and business.	Business, business.
Charitable.	Generous.
Boasts of its ancestors and learning.	Boasts of its growth and enterprise.

Washington, D.C. — Population (1905), 304,000. Half as large as Boston; about the size of Detroit.

On the left bank of the Potomac, one hundred miles from its mouth.

The "City of Magnificent Distances." Finest and healthiest of American cities; resembles Paris; streets very wide; many parks and open squares. Washington is the capital of the United States, and contains the Capitol, standing on grounds containing fifty-two acres. The Capitol is built of white marble and freestone: it consists of a central building surmounted by a dome two hundred and eighty-five feet high, and two wings. The north wing is for the Senate, and the south wing for the House of Representatives, — the largest legislative room in the world, seating four hundred members: the galleries will seat fifteen hundred spectators. The Supreme Court has rooms in the central building.

The Treasury building contains a hundred and ninety-five rooms, the marble room being the finest. This building cost the Government six million dollars.

Other large and costly buildings are the State, Navy, and War Departments, the Interior Department, Post-Office Department, Smithsonian Institute, Naval Observatory, Soldiers' Home, etc.

The President's residence is called the White House, and is surrounded by grounds containing twenty acres.

The Washington Monument is an obelisk of marble five hundred and fifty-five feet high, and fifty-five feet square at the base.

Washington society is cosmopolitan.

Congress meets the first Monday in December.

There is no commerce, and little business except making laws, in this city.

New Orleans. — Population, 322,000. Twice as large as Toledo; one-half as large as St. Louis or Boston; about the size of Washington, D.C.

Situated on the left bank of the Mississippi River, seven hundred miles south of St. Louis, one hundred miles above delta of river.

Called "Crescent City" because of the shape in the bend of the river. It has grown so lately that the city is now in the form of the letter S.

The city is several feet below the river. The *levee* to protect the city from the river extends two hundred miles above the city, and fifty miles below the city. It is fifteen feet wide on top, and it makes a good promenade.

There are several fine buildings, such as the Custom House, built of Quincy granite, — the largest edifice in the country, except the Capitol at Washington; also City Hall, Branch Mint, State House (once the famous St. Louis Hotel), St. Patrick's Hall, St. Charles Hotel, etc.

Canal is the main business-street. There is some difficulty in draining the city.

Formerly afflicted with yellow fever. Now the epidemics are very rare.

Commerce greatly increased since the jetties have been finished at the mouth of the river.

Exports cotton and sugar. One-third of all the cotton exported from United States. Sugar is here piled up in sheds like coal.

Between Christmas and Lent the greatest carnival in the United States is held. This takes place every year on Mardi Gras, or Shrove Tuesday. Then the people dress to resemble animals, goblins, and such creatures, and march through the streets with music and torches, setting off fire-works as they proceed.

Mexico. — Population (1900), 344,700. Larger than New Orleans.

Finest and most brilliant city in Spanish America. The observer is far more impressed by the natural scenery surrounding the city, than by its buildings and monuments

Lies in the centre of the Anahuac tableland, midway between two oceans, in a zone of perennial spring; 7,465 feet above the sea-level.

It is a handsome city, tolerably clean; forms a perfect square; streets spacious, perfectly straight, and level; finest open place in America.

A splendid sight presented by the Plaza, one thousand feet square. Wonderful cathedral, overlaid with gold, silver, and precious stones. Arcades where all kinds of business are carried on.

Five miles to the south-west is situated the castle of Chapultepec, standing on a hill over two hundred feet high. Maximilian made it his home.

Alameda is a public park containing forty acres.

The Tivoli Gardens are very beautiful; the tables for eating are arranged in the trees, in boxes, etc. The gentry breakfast about 12 M. in this garden. The floating gardens are not common now.

Principal Cities of the United States.

The important cities of the United States, and also of North America, are nearly all commercial cities situated on the water. In the frontispiece the water-situation of many of these cities is shown, and one city contrasted with another. A city situated on an island like New York, or on a peninsula like Boston, well surrounded with water, having plenty of wharves, has a great advantage over Chicago and Philadelphia, which possess much less water-communication. [Are most of the large cities of the country on the north or the south, the west or the east, of the rivers and bodies of water nearest them?]

XIII. JOURNEYS

[Assign as a home lesson proposed journeys across the country from different points, such as are suggested below.]

1. Down the Mississippi. (Consult *Four Months in a Sneak-Box*, by Bishop, and King's Elementary Geography, chap. 37.)
2. From Boston to Chicago, *via* Philadelphia and Pittsburg.
3. From Chicago to San Francisco, *via* Union Pacific. (Consult *Fifth Avenue to Alaska*, by Pierrepoint.)
4. From St. Louis to San Francisco, *via* Southern Pacific. (Consult Codman's *Round Trip*.)
5. From New York to Mexico in eight days. (Consult Ober's *Mexico*.)
6. From Boston to Smith Sound. (Consult Hayes's *Open Polar Sea*.)
7. From east to west on the fortieth parallel. (Consult the imagination and memory.)
8. From north to south on the ninety-seventh meridian.

From the Dearborn School, Boston, to Chicago.

A happy party of boys and girls from the graduating class, and their two teachers, boarded the Western Express in the Boston and Albany Depot, June 3, for a trip to Chicago.

I was selected secretary of this travelling club of ramblers, and now present my official report of our proceedings. We had, of course, two special Pullman drawing-room cars provided for our accommodation. Leaving Boston at 8.30, we were, in about six hours, crossing the Hudson and rolling into Albany, the capital of New York. There was no time to stop and examine the costly State House, decorated by our neighbor, the great painter and artist; for the train in a few minutes left for the West, over the New York Central Railroad.

We passed too rapidly for careful description, through the charming Mohawk Valley, in sight of the Erie Canal, and along this rich agricultural portion of the Empire State. Niagara Falls was reached about 12 P.M., and we retired at the Cataract House before seeing, but not before hearing, the great cascade. In the morning we caught, from the piazza of this hotel, our first glimpse of the moving water. What exclamations of wonder escaped from the lips of the sightseers!

Most of this day was spent in viewing the falls from different points. It is difficult to realize what a mass of water is constantly descending the one hundred and sixty feet of the fall, till the observer stands at the foot of the moving avalanche and looks upward. Our party were especially delighted with the views from Goat Island. I noticed that the *rumble* of the falls is not a harsh, unpleasant sound, but rather sweet and musical, although loud enough to be heard thirty miles away.

As the ride onward to Chicago was passed by us in a state of unconsciousness in a sleeper, I refrain from comment.

The great business-life of Chicago is easily seen in the vicinity of the Palmer House where we stopped, in such streets as Clark, Dearborn, State, and Monroe. Boston knows little of such rush and push.

In our rambles about the city, several of us visited the stockyards, which are covered with sheds and pens, capable of keeping two

hundred and forty thousand head of cattle at once. Near by are many slaughtering and packing establishments, and a hundred miles of railroad-tracks. On many of the streets cable-cars are used, run in trains of three cars. This system secures greater speed, and is especially adapted to such straight and long streets. One morning the party rode in barouches through Michigan Avenue, one of the most complete *boulevards* connecting the different parks. This grand avenue is two hundred and fifty feet wide, and lined on each side with beautifully arranged plots of flowers, graceful elms, and superb residences, owned and occupied by the city princes of wealth.

We then inspected several new buildings, such as the Board of Trade, where the grain-speculators are said to meet and "gamble;" the County Court House and City Hall, towering in majestic proportions, and reminding one of the photographs of buildings in Paris. We also rode by the Post-Office and Custom House, and the Pullman Building, the last noted for being only fourteen stories high. The upper story is a kitchen; the thirteenth story, a restaurant.

In the afternoon we rode out to Lincoln Park, on the north side, — the oldest, as well as the most beautiful, park in the city. It covers two hundred and fifty acres, has an infinite variety of drives and elevations, from which grand views of the lake are obtained, in some respects reminding the writer of Franklin Park at home; and yet a few years ago this spot was a flat, unattractive prairie. In the zoölogical garden were to be seen some unusually fine specimens of the grizzly bear, buffaloes, prairie-wolf, and California seal. In the centre of the park two or three acres are laid out in an immense flower-garden, such as to make our boasted efforts in that line sink into insignificance.

XIV. COMPARISONS

[Write on the board, for comparison by the class for review, such topics as the following.]

Compare the Yosemite Valley with the Wisconsin Dalles.

The Colorado Cañon and the Connecticut Valley.

Mount St. Elias and Mount Washington.

The Merrimac River and the Potomac.

The fiftieth parallel and the thirty-fifth parallel.

The climate of New York and Southern California.

Compare Georgia and Nevada.

The cultivation of rice and maize.

Newfoundland and Cuba.

The fruits of Massachusetts and those of Florida.

The Indian and the Negro.

[Each pupil at the board, or on paper, is directed by the teacher to]

Contrast the

NEW WORLD WITH THE OLD WORLD.

Two grand divisions.	Four grand divisions.
One-half as large.	Twice as large.
Long and narrow.	Length and breadth nearly equal.
Mountains extending north and south.	Mountains extending east and west.
Plains equal to two-thirds of the surface.	Plains equal one-third of the surface.
Plateaus cover one-third of the surface.	Plateaus cover two-thirds of the surface.
Greater amount of moisture.	Less amount of moisture.
Vegetable life abundant.	Animal life abundant.
100,000,000 inhabitants.	1,300,000,000 inhabitants.
Republics.	Monarchies.
Growing and improving.	Standing still.

Comparison.

Compare your own country with the one to the north, or the one to the south.

Compare your own State with the largest State adjacent.

Compare your own city, or town, with the one east or west.

Compare the schools in your town with those in some other town.

Compare the roads, or any means of travel in your town, with those in some distant town or city.

CHAPTER XVI

COMMERCIAL GEOGRAPHY

One country exchanges its *surplus* produce for the *surplus* produce, respectively, of other countries. — *Yeats.*

BOOKS FOR CONSULTATION

Adams's Commercial Geography.
Bevan's Ship-Building and Railways.
Barker's Trade and Finance (annual).
Chisholm's Commercial Geography, 1905.
Johnson's Transportation.
Great Industries of Great Britain.
Homan's Cyclopædia of Commerce.
Kalb's Condition of Nations.
Maleaux's Wonderland of Work.
Mill's International Geography.
McCulloch's Dictionary of Commerce.
Mulhall's Dictionary of Statistics.
Redway's Commercial Geography, 1903.
Scribner's Magazine.
Spon's Encyclopædia of Manufacturing.
Statesman's Year-Book, Keltie.
Tilden's Commercial Geography, 1900.
Trotter's Geography of Commerce.
Yeats's Growth of Commerce, 1888.
Yeats's Raw Materials of Commerce, 1888.
World's Work (Illust. Magazine).

CHAPTER XVI

COMMERCIAL GEOGRAPHY

HISTORY AND GROWTH OF COMMERCE — KINDS OF COMMERCE — IMPORTANT COMMERCIAL COUNTRIES — HOW CARRIED ON — NOTED TRADE ROUTES — GREAT RAILROAD ROUTES — TRUNK LINES — COSTLY BRIDGES — BOSTON TO MEXICO — IMPORTANT WATER ROUTES — ARTIFICIAL WATER ROUTES — TELEGRAPH AND TELEPHONE — COMMERCIAL CENTRES — "THE THREES OF COMMERCE" — COMMERCIAL TRIP ROUND THE WORLD

IN the Saxon age, neither commerce nor productive industry existed. Each family was self-contained, like a savage Indian. There was then no division of labor, no interchange of movable property in the modern sense, no communication worthy of the name.

Commerce was once confined to the Mediterranean Sea, but even then it was active; and Venice grew rich in its service, till Vasco de Gama doubled the Cape of Good Hope, and turned the trade to England.

The discovery of America opened new possibilities for commercial activity, but the invention of the steam-engine created new developments in both manufacturing and commerce. Commerce then becomes indirectly a mighty agent of production, since it stimulates the industry of every country. Commerce, on the other hand, grows with the growth of productive industry.

"Every new raw material brought within the range of manufacture, every increase in the yield of the soil from improved husbandry, every appliance to make labor-saving machinery more effective, every

new process of service to lessen the cost of production, every wise legislative act that clears the path of labor and interchange, every geographical discovery and settlement, every new market in distant ports, and every advance of the laborer in the exercise of the industrial virtues, swells, by so much, the dimensions of the national commerce."

The interchange of the products of one country with another, has had great influence on the human race. The potato was carried to Europe; maize, to Asia.

The search for gold, ivory, and diamonds, has opened up new parts of the world, and secured their early settlement. The search for platina disclosed the most guarded recesses of the Cordilleras and the Ural Mountains. The need of copper led to our acquaintance with the Great Lakes. The demand for whale-oil and rich furs has opened to all people the indispensable riches of the polar world.

The remarkable growth of commerce and wealth during the last fifty years is vividly shown by such a table as the following, taken from English Parliamentary Reports: —

Per-capita Consumption of Different Articles imported largely by the People of Great Britain.

Articles.		1840.	1886.
Bacon and hams	lbs.	0.01	11.95
Butter	"	1.05	7.17
Cheese	"	0.92	5.14
Currants and Raisins	"	1.45	4.02
Rice	"	0.90	10.75
Wheat and wheat flour	"	42.47	185.76
Sugar (raw)	"	15.20	47.21
Sugar (refined)	"	none	18.75
Tea	"	1.22	4.87
Eggs	no.	3.63	28.12
Tobacco	lbs.	0.86	1.42
Coffee	"	1.08	0.86

A full year's supply of meat and bread for an adult person in the United States can now be transported from the places where most abundant, a thousand miles, to where most needed, for the cost of a mechanic's single day's wages.

Commerce is the exchange of productions, on a large scale, between different places. It is readily divided into two kinds; viz., ***Domestic*** and ***Foreign.***

The principal articles exchanged are grouped under the following three heads: **1. Food; 2. Clothing; 3. Metals.** Or, by another grouping: **1. Raw Material; 2. Manufactured Goods.**

COMMERCIAL COUNTRIES AND CENTRES

Commerce is greatly facilitated by the contour of the country. A grand division with many projections and indentations, like Europe, is likely to have good harbors; and it is easy for ships to go from one point to another, as many of the water-routes are within sight of land. South America and Africa are illustrations of the opposite condition, and their history has little to do with commerce. The three navigable rivers in South America make up for the lack of projections. (Dodge's and King's Advanced Geographies.)

The great commercial countries to-day are, according to value, *Great Britain*, *United States*, *Germany*, *France*, *Holland*, *Belgium*, *Russia*, *Austria*.

The commerce of the British Empire, including India, Canada, and Australia, is about the same as the united trade of France, Germany, and the United States. The commerce of England to-day is about nine times as great as it was in 1800. The commerce of France in the same time has increased still more rapidly. Great Britain has the most trade with India, of all her possessions; next comes Australia,

and then Canada. The imports of the United States from Great Britain were the same in 1903 as in 1888, but her exports to Great Britain had increased from $400,000,000 to $610,000,000, or about 50%.

The noted commmercial centres of the world are, for

General Commerce.

Liverpool and London	In England.
New York, Boston, and Philadelphia	United States.
Hamburg and Bremen	Germany.
Antwerp	Belgium.
Marseilles and Havre	France.
Alexandria	Africa.
Calcutta	Asia.
Melbourne and Sydney	Australia.
Rio Janeiro	South America.

Liverpool and London are at the end of two great commercial water-routes. [Ask the children to mention the cities at the other end. Boston and New York are at the end of a great commercial land-route. What city is at the other end?]

"*England* is anchored in the side of Europe, and right in the heart of the modern world. It has the best commercial position on the whole planet.

"Every natural deficiency is compensated by wonderful energy. The country, though foggy and rainy, has furnished the world with astronomical observations. Its short rivers do not afford water-power, but the land shakes under the thunder of the mills. With no gold mines, there is more gold in England than in all other countries. Too far north for the vine, the wines of all countries are in its docks. 'No fruit ripens in England but a baked apple,' says a French critic, but oranges and pine-apples are cheaper there than in the Mediterranean." — *Ralph Waldo Emerson.*

"A power," says Webster, "that has dotted over the surface of the globe with her possessions and military posts, whose morning drum-beat, following the sun, and keeping company with the hours, circles the earth daily with one continuous and unbroken strain of the martial airs of England."

"Between two seas, *France* has the next best position for commerce. Humboldt pronounced its climate the finest in the world. But its rare resources are in the character of its people. The French seldom emigrate. They have peculiar skill in providing for luxury abroad, and in practising economy at home. The rich of every land are buyers of their high-priced products. Great Britain and the United States alone pay yearly to France $300,000,000, mostly for luxuries of food and dress."

England has over twenty-two thousand merchant vessels, manned by over two hundred thousand seamen. Her commerce is protected by the largest navy in the world. She has established fortified naval depots for coal and provisions along all the great routes of commerce. For example, in the Mediterranean are Gibraltar, Malta, and Cyprus; on the South-African route, St. Helena, Cape Town, and Mauritius; on the East-India route, Aden, Bombay, Calcutta, Singapore, and Hong Kong; Melbourne, etc., in Australia; Jamaica and Balize in the West Indies; Halifax and Quebec in Canada. *The sun never sets on her flag.*

The United States, in contrast, has, at present, very few vessels engaged in foreign commerce. [WHY?]

The United States produces nearly three-fifths of the cotton crop of the world. More is produced now in the South by free labor than was formerly done under slave labor. India now raises about one-sixth as much cotton as the United States.

India now raises more tea than Japan. It all goes to England. China raises two-thirds of all the tea. The United States imports its tea from Shanghai, Amoy, and Chefoo, Kanagowa and Hiogo; its fire-crackers from Canton; its rattans from Singapore and Batavia; its bananas[1] from Kingston and Truxillo; its cocoanuts from Trinidad and Porto Rico; its raisins from Malaga, Barcelona, and Denia. California now raises most of our raisins.

HOW CARRIED ON

Commerce is carried on in a variety of ways.

ON LAND

(In Savage and Semi-civilized Countries.)

1. By *porters*, as the negro carriers in Africa.
2. By *dogs*, as the dog-trains in Greenland and Siberia.
3. By *llamas*, as in the Andes of South America.
4. By *camels* (caravans), as across the deserts of Africa and Asia.
5. By *horses* (sleighing on snow or ice), as in Russia.

(In Civilized Countries.)

6. By *railroads*.

ON WATER

1. By *boats* on canals.
2. By *sailing-ships*.
3. By *steamers*.

Steamers are now rapidly taking the place of sailing-vessels.

[1] An average bunch of bananas in Kingston, Jamaica, is worth fifty cents, the same in Boston is worth two dollars and fifty cents.

NOTED TRADE ROUTES [1]

OVERLAND

Through Siberia.

From Pekin to Kiachta, Irkutsk, Tomsk, Nijni-Novgorod, to Moscow.

Across Sahara.

1. From Morocco and Fez to Timbuctoo.
2. From Tunis to Sackatoo.
3. From Tripoli to Mourzouk and Kouka.
4. From the lower cataract of the Nile to Central Africa.

GREAT RAILROAD ROUTES

EUROPE

1. Liverpool to London.
2. Glasgow to London.
3. Edinburgh to London.
4. London to Dover.
5. London to New Haven.
6. Lisbon to Reggio, *via* Madrid and Marseilles.
7. Brest to Otranto, *via* Paris and Turin.
8. Brest to Bucharest, *via* Paris and Vienna.
9. Brest to Berlin, Moscow, and to Orenburg, Ural River, three thousand two hundred and sixty-six miles. (Now completed through Siberia to China.)
10. Cadiz to St. Petersburg, three thousand miles.

These lines are crossed by six north to south lines.

AFRICA

Alexandria to Cairo and Suez.

ASIA

Bombay to Madras.
Bombay to Calcutta.

[1] In all cases the route is to be traced on the maps: afterwards it should be drawn on the large blackboard outline map by the pupils.

NORTH AMERICA

The grand trunk lines in this country run mostly from the east to the west, passing through the valleys and passes of the intersecting mountains.

[Why do they run in this direction?]

British America.

CANADIAN PACIFIC. — From Quebec, *via* Montreal, the St. Lawrence Valley, north of Lake Superior, Winnipeg, the valleys of the Saskatchewan and Fraser rivers, over the Rocky Mountains, to Victoria.

In the United States.[1]

Eastern Half.

The most important routes between the Atlantic coast and the Mississippi Valley are the following: —

1. The *Grand Trunk* Line, from Portland, Me., through the White Mountains to Montreal, the St. Lawrence Valley, Canada, north of Lakes Ontario and Erie, to Chicago.

2. The *Boston and Albany*, and the *Hoosac Tunnel* routes, across Massachusetts by parallel routes to Albany, through the Mohawk Valley, and the centre of New-York State, to Buffalo, Chicago, and St. Louis.

3. The *New York and Erie Road*, from New-York City *via* the Delaware, Susquehanna, and Chemung valleys, to Buffalo, Cleveland, and Chicago.

4. The *Pennsylvania Central*, from New York to Philadelphia, *via* the Susquehanna and Juniata valleys, to Pittsburg; thence to Chicago or St. Louis.

5. *Baltimore and Ohio Railroad*, from Baltimore to Washington, through the Potomac Valley to Wheeling and Chicago, or to Cincinnati and St. Louis.

6. *Norfolk and Western Railroad*, from Norfolk or Richmond,

[1] Trace these routes on the commercial map. Draw on blackboard.

through Lynchburg and the valley of the Tennessee, to Chattanooga and Memphis; or from Chattanooga by way of Birmingham, Ala., to New Orleans.

7. *Central Georgia Railroad*, from Savannah and Charleston, by way of Macon, Montgomery, and Jackson, to Vicksburg or New Orleans.

These great trunk lines are connected with one another by numerous lines running north and south,[1] so that all places of any importance can be reached now by railroad.

Western Half.

The Mississippi Valley is connected with the Pacific coast by four trunk lines: —

1. The *Northern Pacific*, from St. Paul and Duluth, by the valleys of the Missouri, Clarke's Fork, Columbia River, to Portland and Olympia on Puget Sound.

2. *Union Pacific*, "Burlington Route" from Chicago, and west *via* the Platte Valley, or St. Louis, by Kansas City and Denver, Cheyenne, Ogden, to San Francisco.

3. *The Santa Fé Route* from Chicago through Kansas City, by the Arkansas Valley, Pueblo, Santa Fé, to San Francisco.

4. *Southern Pacific*, from New Orleans, by Austin, El Paso, and Gila valleys, to Los Angeles and San Francisco.

Mexico.

1. The *Central Mexican*, from El Paso *via* Chihuahua to City of Mexico.

2. *Mexican Railway*, from Vera Cruz to Mexico.

3. *Mexican National*, from Laredo on the Rio Grande, by Monterey and Satillo, to City of Mexico. Narrow Gauge, two thousand miles long, three hundred miles not finished (1886).

The trade of the sparse population west of the 100th meridian has not yet required so many cross-roads from north to south as in the eastern part of the country.

[1] From the Great Lakes and the St. Lawrence, to the Gulf and Atlantic coasts.

Narrow-gauge roads are now being built in the Pacific Highlands region. The United States has more miles of railroad than any other country in the world; the amount being now about two hundred and seventeen thousand miles, five thousand of which were built and completed in 1903; one million persons are employed to run them.

This would equal four hundred thousand miles of rails, — enough in length to make sixteen steel girdles for the earth's circumference, or to reach thousands of miles beyond the moon.

Europe has about one hundred and eighty-four thousand miles of railroad, and two hundred thousand miles of telegraph, including the lines through Siberia.

The Isthmus of Panama is crossed by a railroad which is one of the most costly routes known to modern civilization. It is said that a hundred thousand people died from the unhealthiness of the climate while it was being constructed.

Some of the most noted *iron bridges* for railroads are the Britannia over Menai Straits, built by Stephenson in 1850, 1,511 feet long; the Victoria over the St. Lawrence, taken down and rebuilt, 7,200 feet long; the St. Louis over the Mississippi, built by Eads in 1874, 1,524 feet long; the Wuzerabad over the Punjaub, 9,300 feet long, finished in 1875; the Cantilever over the Niagara below the Falls, built by the Michigan Central Railroad, 910 feet; the Brooklyn over the Hudson, 3,455 feet long, 210 feet high, built by Roebling, aided by his wife, 1883; Williamsburg, in 1905. Poughkeepsie Bridge is about 6,760 feet long.

The *St.-Gothard* railway starts from the Lake of Lucerne in Switzerland, passes through the nine-mile mountain tunnel,

three thousand feet above the sea-level, and descends to Lugano on Lake Maggiore, Italy, a distance of a hundred miles, which is pursued in spirals and curves along the mountain-sides, and through tunnels and galleries of greater or less extent. Besides the great tunnel, with its length of nine and a quarter miles, there are fifty-two smaller ones, with an aggregate length of fifteen miles. The nature of the valley requires that several of these tunnels should be constructed in a spiral, instead of making, as is usual, long curves. In the narrow valley of the Reuss the road is doubled on itself, like a winding-stair; and the difference in grade is surmounted within a tunnel. In one place the railroad rises thus over four hundred and fifty feet by means of three tunnels. Between Airolo and Lugano on the Italian side of the Alps, there are four other spiral tunnels, each of which is about a mile in length. The cost of this railroad was $47,600,000, contributed by the Italian and Swiss governments. The railroad bridges of the United States would reach from New York to Liverpool.[1]

Some well-managed railroads are the Austrian Government road from Trieste, over the Austrian Alps, to Vienna; the London and North Western road in England; the Hartford and New Haven in Massachusetts; and the Pennsylvania Railroad, from Philadelphia to Pittsburg.

Some railroads which reach high elevations are the Union Pacific, United States; the railroad from Callao to Oroya in South America. This road crosses the Andes through a tunnel which is three miles above the sea, and it passes a mountain gorge on the highest bridge in the world.

[1]For pictures of noted railroad bridges, see Cooley's *Am. Railways.*

Specimen Time-Table.

BOSTON TO CITY OF MEXICO.

Leave Boston about 6 P.M. . .	Arrive New York 7 A.M., 233 miles.
Leave New York (Pennsylvania Railroad) 8 A.M . . .	Arrive St. Louis 7.30 P.M. second day, 1,298 miles.
Leave St. Louis 9 P.M. . .	Arrive Kansas City 9 A.M. third day, 1,610 miles.
Leave Kansas City at 10 A.M. .	Arrive El Paso 4.30 P.M. fifth day, 2,456 miles.
Leave El Paso 6.30 P.M. . .	Arrive City of Mexico 7.30 A.M. eighth day, 3,883 miles.

IMPORTANT WATER-ROUTES

Natural Routes for Foreign Commerce.

1. *Liverpool* to New York; to Quebec; to Bombay *via* Suez Canal, or round Cape of Good Hope; to Point de Golle, Madras, and Calcutta; to Singapore; to Hong Kong; to Melbourne; to Aspinwall; to Para; to Rio Janeiro.

2. *New York* to Liverpool: to Havana; to New Orleans; to Aspinwall; to Para; to Rio Janeiro; to Valparaiso; to San Francisco; to Cape Town.

[The route across the Atlantic, from New York to Liverpool, is one of the most dangerous in the world. Why? Give two or more reasons.]

3. *San Francisco* to Panama; to Callao; to Yokohama; to Hong Kong; to Honolulu; to Auckland and Melbourne; to Portland, Ore.; to Sitka.

4. *Marseilles* or *Havre* to ports in the Mediterranean; through the Suez Canal to Bombay, etc.; to Buenos Ayres; to Aspinwall; to Martinique; to New York.

5. The rivers Mersey, Thames, Danube, Elbe, and Weser.

Natural Water-Routes for Domestic Commerce.

1. From the vicinity of Chicago, by the Mississippi River and its branches, to New Orleans.

2. From the Great Lakes, by the St. Lawrence River, to the ocean.

3. Down the Hudson River to New York.

There are over fifty thousand miles of navigable rivers in North America, besides the Great Lakes with their thousands of miles of fresh-water shores.

Artificial Water-Routes for Domestic Commerce.

United-States and Canadian Canals.

1. The Erie Canal connects the Hudson River and Lake Erie at Buffalo, 352 miles. It is used largely for transporting grain to the sea-board, and is to be enlarged at great expense.

2. Three canals connect Lake Erie with the Ohio River, and are used for general merchandise.

3. Numerous canals are used in the valleys of Pennsylvania, and the Potomac Valley in Maryland, for transporting coal and iron ore from the mountains where they have been mined, to the cities where they are used.

4. The Welland Canal, from Lake Erie to Lake Ontario, 27 miles, to avoid the Niagara River and Falls.

5. Several canals around rapids in the St. Lawrence River, near Montreal, such as the Lachine and Beauharnois canals.

6. The Rideau Canal, from Ottawa to Kingston, Lake Ontario.

7. A canal around the rapids in the St. Mary's River, between Lake Superior and Lake Huron.

There are about four thousand miles of canal in the Middle and Central States.

Other Countries.

Suez Canal, 92 miles; finished 1869; cost $85,000,000.

Canals are numerous in England, France, Germany, Russia, India, Holland, and Austria.

There are many in China; the most important is the Imperial Canal, from Pekin to Shanghai, — the longest in the world, 2,100 miles, and the most used. The Vishnev, in Russia, connects St. Petersburg with the Caspian Sea, 1,434 miles. Recent canals are the Manchester Ship Canal (35 m.), the Kaiser Wilhelm (61 m.), and the Elbe and Trave (41 m.).

Proposed Artificial Routes.

1. Panama Canal.
2. From Lake Erie to Pittsburg.

These are now being constructed. [When finished, how will they affect trade?]

The assistance of the postal service, and lines of telegraph and telephone, is employed to direct all this commerce.

Over one hundred and fifty thousand miles of telegraph are now daily used in the United States, and nearly three hundred thousand miles in Europe.

Five ocean cables are in use now between the United States and Europe, and the traffic over them amounts to as much as fifty thousand words in a day. There is a line between England and India, China and Japan, France and West Indies, East Indies and Australia, Lisbon and Brazil.

The *facts* of commerce may be presented in a variety of ways. Perhaps the most interesting are the three following: —

1. Emphasize the Great Commercial Centres of Trade.

2. Take a commercial trip round the world, starting near home, and gathering up the exports.

3. Make out a list of the three leading exports from the three greatest exporting towns in each continent. This makes a pretty review lesson.

The following were

SPECIAL COMMERCIAL CENTRES IN 1900

[*The largest centres are generally mentioned first.*]

RAW MATERIALS

Caoutchouc. Para, Tamatav.

Coffee. Rio Janeiro, Maracaibo, Santos, Batavia (Java), Vera Cruz, Padang.

Coal. Philadelphia, Newcastle, Buffalo Creek, N.Y.

Copper. Lake Superior, Cornwall, Valparaiso, Sydney.

Cotton. New Orleans, Mobile, Galveston, Savannah, New York, Calcutta, Alexandria, Bombay.

Fruits. Havana, Kingston, Malaga, Los Angeles, Cal., Smyrna, Jacksonville, Azores, Port Antonia (Jamaica).

Furs. London, Yakutsk, Victoria, Okhotsk, St. Petersburg, Sitka.

Hides. Montevideo, Rio Janeiro, East Indies, Vera Cruz.

Gold. Melbourne, Johannesburg, San Francisco, Cripple Creek.

Iron (pig). Pittsburg, Philadelphia, Chicago.

Petroleum. Philadelphia, New York, Pittsburg, Baltimore.

Rice. Charleston, Calcutta, Rangoon, Yokohama, Batavia.

Salt. Saginaw, Syracuse, Turk's Island, Lisbon, Cracow (Poland).

Silk. Canton, Shanghai, Hong Kong, Yokohama, Marseilles, Genoa, Leghorn.

Silver. Denver, Virginia City, Butte, Acapulco, Valparaiso.

Spices. Batavia, Amboyna, Hong Kong, Singapore, Cayenne, Rio Janeiro.

Sugar. Havana, Mauritius, Rio Janeiro, New Orleans, Batavia, Manilla, Honolulu.

Sulphur. Messina (Sicily).

Tea. Canton, Hankow, Foochow, Shanghai, Calcutta, Yokohama.

Tin. Cornwall (England), Singapore.

Tobacco. Virginia, Baltimore, Havana, Constantinople, New York, Manilla.

Wine. Marseilles, Bordeaux, Bremen, Oporto, Madeira Islands, Melbourne, Cape Town, Lisbon, San Francisco.

Wheat. Chicago, New York, San Francisco, Dantzic, Odessa.

Wool. Melbourne, Buenos Aires, Cape Town, Auckland, Odessa.

OTHER ARTICLES

Art. Paris, Rome, London.

Fancy Goods. Paris, England, Philadelphia, New York, Boston.

Iron. England; Pittsburg, Penn.

Machinery. England, United States, Germany.

Ships. Glasgow.

MANUFACTURED GOODS—CLOTHING

Cotton Goods. In England: Manchester, Glasgow, Preston; in United States: Lowell, Manchester, Lawrence, Fall River, New Bedford, Atlanta; Germany, Russia, France.

Linen Goods. Belfast, Bremen, Hamburg.

Silk Goods. Lyons, Avignon, Tours (France), Amsterdam, China, Japan.

Woollen Goods. Leeds, Bradford, Bremen, Hamburg, United States.

In the United States.

The *New England States* supply such manufactures as cotton cloth, boots, shoes, and "notions."

The *Middle States* supply similar manufactures, and coal, iron, and petroleum.

The *Central States* supply grain and meat, and manufactures.

The *North-Western States* supply grain, lumber, copper, and iron ore.

The *Southern States* supply cotton, rice, and sugar, coal and iron.

The *Rocky Mountain States and Territories* supply gold and silver.

California and Oregon supply gold, wheat, and wool.

Commercial Trip round the World for Exports.

[*The class will enjoy this all the more, if the teacher suggest that they imagine themselves on board of a great steamer like a "Cunarder".*]

Boston. Grain, cotton manufactures, bacon and hams, lard, leather, tobacco, wool, boots, and shoes.

New York. Breadstuffs, petroleum, pork, and lard, textiles.
Philadelphia. Wheat and flour, cotton manufactures, bacon and hams, petroleum, coal, carpets.
Charleston. Sea-Island cotton.
New Orleans. Cotton, breadstuffs, oilcake.
Vera Cruz. Silver, hennequen (or sisal hemp), coffee.
Havana. Sugar, cigars, molasses, tobacco.
Para. India-rubber, Peruvian-bark.
Rio Janeiro. Coffee, sugar, diamonds, hides, cotton.
Buenos Ayres. Animal products, grain, wool.
Valparaiso. Wheat, copper, wool, nitrate, iodine.
San Francisco. Wheat, precious metals, cotton cloth, fruit, wine.
Yokohama. Silk, tea, rice, cotton yarn, copper, camphor, coal.
Hong Kong. Tea, silk, sugar, straw-braid, hides, cotton, fire-crackers.
Singapore. Tin, spices, gums, copra, and rattan.
Batavia. Coffee, sugar, tea, cinchona, spices, tin.
Melbourne. Gold, wool, animal products, copper, coal.
Calcutta. Grain, cotton, seeds, opium, jute, tea, rice, wool, indigo.
Odessa. Grain, wool, hemp.
Trieste. Sugar, wood, grain, eggs, cattle, horses.
Marseilles. Wine, silk, woollen manufactures.
Malaga. Fruits, wine, and raisins.
Havre. Articles of taste and fashion made in Paris; brandy.
Amsterdam. Grain, iron and steel, textiles, copper, butter.
Riga. Flax, hemp, timber, cattle products, furs.
Liverpool. Cotton manufactures, woollen manufactures, iron, and machinery, coal, chemicals, hardware.

THE THREES OF COMMERCE[1]

First Set of Threes.

[*The largest in value mentioned first.*]

1. EUROPE.
   - *a. Liverpool* exports: 1. Cotton manufactures. 2. Woollen manufactures. 3. Iron and machinery.
   - *b. Marseilles* exports: 1. Woollen manufactures. 2. Silk. 3. Wine.
   - *c. Hamburg* exports: 1. Cotton. 2. Iron goods. 3. Woollen manufactures.

[1] The exporting town represents the country in which it is situated.

2. North America.
   - *a. New York* exports: 1. Provisions. 2. Oils. 3. Iron and steel.
   - *b. New Orleans* exports: 1. Cotton. 2. Breadstuffs. 3. Oilcake.
   - *c. San Francisco* exports: 1. Gold and silver. 2. Cotton cloth. 3. Breadstuffs.

3. Asia.
   - *a. Hong Kong* exports: 1. Silk. 2. Tea. 3. Chinese wares.
   - *b. Yokohama* exports: 1. Silk. 2. Cotton yarn. 3. Coal.
   - *c. Calcutta* exports: 1. Provisions. 2. Cotton. 3. Rice.

Second Set of Threes.

1. South America.
   - *a. Rio Janeiro* exports: 1. Coffee. 2. Cotton. 3. Hides.
   - *b. Buenos Ayres* exports: 1. Animal products. 2. Grain. 3. Wool.
   - *c. Valparaiso* exports: 1. Nitrate. 2. Copper. 3. Iodine.

2. Australia.
   - *a. Melbourne* exports: 1. Gold. 2. Wool. 3. Animal products.
   - *b. Sydney* exports: 1. Wool. 2. Gold. 3. Coal.
   - *c. Auckland* exports: 1. Wool. 2. Gold. 3. Frozen meat.

3. Africa.
   - *a. Alexandria* exports: 1. Cotton. 2. Grain. 3. Tobacco.
   - *b. Cape-Town* exports: 1. Gold. 2. Diamonds. 3. Wool.
   - *c. Algiers* exports: 1. Zinc. 2. Alfa. 3. Cork.

A Prosperous Country.

(1905.)

The calendar year, 1905, makes a new record in exports — over $1,600,000,000, or $175,000,000 increase over 1904. In ten years exports have doubled, practically — $825,000,000 in 1895. Of the year's great total, agricultural furnished $828,000,000, manufacturing, etc., $799,000,000. These increased over 1904 by $98,500,000 and $77,000,000 respectively. The years 1903, 1901 and 1900 showed larger agricultural exports, but 1905 came within $36,000,000 of the record year — 1901. As to manufactured exports, including the comparatively small total of forest, fishery and other non-agricultural products, we see in nine years a total more than doubled — $370,000,000 in 1896, $799,000,000 in 1905.

As to imports of merchandise, we see a new record in 1905 — $1,180,000,000, or $135,000,000 greater than in 1904. As exports increased by $175,000,000, we see $40,000,000 more in "balance," or exports excess, which for 1905 was $447,000,000. In short, exports increase in recent years has kept fully abreast of the rise in imports; we are the better purchaser because the better seller; and it is to be kept in mind that much of this increase in imports is in the form of crude or partially manufactured merchandise for use in our industrial establishments.

CHAPTER XVII

COMMERCIAL GEOGRAPHY — PRODUCTIONS, EXPORTS, AND IMPORTS

THOSE who command the sea, command the *trade* of the world; those who command the trade of the world, command the *riches* of the world, and thus command *the world itself*. — *Raleigh.*

BOOKS FOR CONSULTATION

CHISHOLM'S HANDBOOK OF COMMERCIAL GEOGRAPHY.
JOHNSON'S AMERICAN RAILROAD TRANSPORTATION.
MERKLEJOHN'S NEW GEOGRAPHY.
PARLIAMENT'S ANNUAL TRADE AND SHIPPING STATEMENT.
REDWAY'S COMMERCIAL GEOGRAPHY.
THE STATESMAN'S YEAR-BOOK. (Published every February.)
UNITED-STATES CONSULAR REPORTS.
WORLD'S ALMANAC. (Published every January.)

CHAPTER XVII

COMMERCIAL GEOGRAPHY — PRODUCTIONS, EXPORTS, AND IMPORTS

FACTS — TRADITIONARY GEOGRAPHY — MODERN COMMERCE — SPENDS MONEY — GOODS CARRIED GREAT DISTANCES — DIAMONDS — OSTRICH-FEATHERS — HOW TO TEACH COMMERCE — THE WORLD'S PRODUCTIONS — LEADING PRODUCTIONS OF LEADING COUNTRIES — LEADING EXPORTS OF LEADING COUNTRIES — LEADING IMPORTS OF LEADING COUNTRIES — EXPORTS OF GREAT BRITAIN — IMPORTS OF GREAT BRITAIN

THE facts which follow, in reference to productions, exports, and imports, have been collected with the greatest care and labor, and are presented with confidence, coming, as most of them do, from the United-States Consular Reports, and from the Trade, Navigation, and Shipping Annual Statements presented to Parliament, England, in 1886.

The statements herein made differ widely from some of our geographical text-books, because the text-books are giving traditionary geography, or teach commerce from a different standpoint than the real business of the present day. In all cases, in this book, the most important articles, according to *value*, are mentioned, rather than the *peculiar* articles of the country.

For example: some of the best geographies teach that the exports of Mexico are "gold, silver, cattle, hides, and cochineal." The recent consular reports show that the exports from Mexico are, according to value, "silver, henne-

quen, woods, coffee, hides and skins, and vanilla." The geography referred to has only *two* right out of *six*. Very little gold is exported from Mexico at the present time; and over twenty articles are mentioned in the consular report before cochineal is reached, by value of exports.

The exports of Egpyt and India, as usually given, are not much nearer the facts in consular reports.

If the faith of teacher and pupil in text-books is somewhat shaken by the facts given below, taken from the highest and most recent authorities, no great harm will be done. The author asks that teacher and pupil may together search for the truth, and correct all errors stated in the following pages, remembering that "To err is human."

Facts about Modern Commerce.

The foreign commerce of the United States amounts to about $2,500,000,000 annually. Almost one-third of this commerce is with Great Britain, one-eighth with Germany. Next stand France, Netherlands, Italy, and Belgium, in Europe.

Fifty-five per cent, or over one-half of our foreign commerce, passes through the port of New York.

[Why is New York favorably situated to manage this commerce?]

Sixty-one per cent of these exports are derived from agriculture, such as cotton and grain. Thirty per cent come from manufactures, and three per cent from mining.

The value of the manufactured exports in 1900 was more than ten times as much as it was in 1860.

The most important imports of the United States are the following, named in order of value: —

Silk and silk manufactures, fibers, sugar, and molasses,

chemicals, coffee, cotton manufactures, hides and skins, wool and woollen manufactures, iron and steel.

Two-thirds of the exports from the United States are now carried in steam-vessels.

Four-fifths of the grain and flour from the West to the Atlantic seaboard is transported by rail, and only one-fifth by the Lakes, Erie Canal, and Hudson River. Much of the Southern cotton is now moved by rail.

Great Britain has the most commerce with her various colonies; then come, in order, the United States, France, Germany, Holland, Russia, and Belgium.

The United States imports the most from Great Britain; and then, in order, come Germany, Canada, Brazil, France, Netherlands, East Indies, and Mexico.

The United States exports the most to Great Britain; then follow, in order, Germany, France, Netherlands, Canada. One-tenth of the commerce of France is with the United States.

Modern commerce and travel have built many great iron bridges; steamers, costing millions of dollars apiece, which can cross the Atlantic Ocean in six days; laid thousands of miles of cable; tunnelled thrice the Alps, once the Pyrenees; crossed the Isthmus of Suez with railroad and canal, and made the Red Sea again a place of busy life, opening old harbors choked for a thousand years with mud and sand.

The number of ships passing through the Suez Canal in 1903 was thirty-seven hundred, mostly English steamers. The canal now pays dividends of seven per cent on total cost. The canal shortens the voyage between England and the East by one-third; that is, it enables two vessels to do the work that would require three by the Cape of Good Hope.

Modern commerce has greatly cheapened the cost of food; so that flour can be made in the West (Minneapolis), and sold in Boston at an advance per barrel of only seventy-five cents.

In 1815, in London, no one believed wheat would ever reach only eighty shillings a quarter; but wheat, in 1886, was raised in Minnesota, and carried to London, and sold for thirty shillings a quarter, at a fair profit. New Zealand now sends in one ship twenty thousand frozen carcasses of sheep to feed the millions of hungry mouths in London. Australia sends millions of tins of preserved fresh meats; and America sends cargoes of cattle, alive or dead.

A merchant in Liverpool can send his order by cablegram to Chicago, — four thousand miles away, — for a thousand barrels of flour, and in twenty-one days receive the same at his store.

In many a peaceful village nestling beneath the glaciers of the Alps, myriads of hands are at work on shoes for British feet, or clocks for American housekeepers, compensated for the distance from the market by the cheap transit.

England pays out annually two hundred million dollars for foreign produce, which Professor Tanner and others think she could raise at home.

Eggs from Copenhagen and Rotterdam are brought to New-York City, much to the disgust of the "Ohio Butter and Egg Packers' Association."

The Express Business.

Express companies in this country are now doing an immense business. These companies and the post-office department carry, at cheap rates, great quantities of goods,

not merely short, but long, distances. Some of the well-known express companies are Adams, United States, American, and National.

Diamonds

Are now exported from Port Elizabeth and Cape Town, from Rio Janeiro and Sydney. The United States imports mostly rough stones from Europe. The Brazilian fields are now almost abandoned. The De Beers mine of Kimberly, near the Vaal River, South Africa, supplies most of the diamonds and regulates their price, which is much greater than formerly. Diamonds are irregular in shape, and unattractive in appearance, when first found. The cutting and polishing of the stones is done principally at Amsterdam and Antwerp.

Ostrich-Feathers

Are brought to the United States from Port Elizabeth and Cape Town, Africa. Flocks of ostriches are found all over Cape Colony, and the Cape farmers buy and sell them as they do sheep; fence the flocks in, grow crops for them, study their habits, and cut their feathers, as matters of business. The value of the feathers imported in 1905 was over two million dollars. The farmers became infatuated with the business when the feathers sold readily for two hundred and fifty dollars per pound, and they gave up wool-growing as too slow a way of making money. The number of ostriches has recently become so great, that the markets are overstocked with feathers, and the price has gone down to fifty dollars per pound; so the farmers in some places are turning their birds loose upon the plains.

Directions to Teachers. — *Do not ask the children to learn this mass of facts*, but to *use* such of these facts as you recommend for reference and composition. Select some of the most important, write them on the board, and let the children compare one country with another in reference to amount and kind of leading productions or exports.

Ask on the board such questions as these: —

What countries probably send hides to England? ivory? apples? meat? cotton? silk? rice? timber?

England, France, and Germany *export* woollen goods: what countries *import* these same goods?

If a ship from the United States sail for Liverpool, what will it carry out, and what bring back?

What articles were probably carried in the following steamers?

Steamers Sailing from New York.

City of Richmond	For Liverpool, March 25.
Ethiopia	" Glasgow, March 26.
Saale	" Bremen, March 28.
Wieland	" Hamburg, March 29.
Rotterdam	" Rotterdam, March 31.
La Bretagne	" Havre, March 31.
Zeeland	" Antwerp, March 31.
Chateau Margaux	" Bordeaux, April 3.
Geiser	" Copenhagen, April 7.
Zaandam	" Amsterdam, April 7.

The daily imports and exports of Boston may be brought to the attention of the class by some selected member, who will perhaps read from the morning "Advertiser" extracts from the "Trade and Commerce" reports, as follows: —

Imports at Boston.

CARDENAS. *Bark Tremont*, 775 hhds. 68 tierces molasses, W. H. Emerson.

CEBU. *Bark Bowman B. Low*, 31,579 bags sugar, Standard Sugar Refinery; 4,100 bales hemp order.

ROSARIO. *Bark Samuel B. Hale*, 10,000 dry ox and cow hides, 35 bales goat skins, 15 do. hide cuttings, Baring Bros. & Co; 35 bales wool, 40 do. goat skins, 30 do. hair, 4 pkgs. stag skins, N. W. Rice & Co.; 8 cases effects, John Duane; 1 do. do., A. & S. E. Spring; 20 lining hides order.

Foreign Exports.

LONDON, ENG. *Steamer Borderer* (cld. March 24); 12 crates 1 box organs; 1 blower; 20 cases 1 bdl. organ materials; 247 tierces tallow oil; 5 baskets gutta-percha; 204 bales cotton waste; 5,600 bdls. 80 cases shooks; 211 head cattle; 1 engine; 1 steam-pump; 16 cases rubber boots; 50 cases chair stock; 40 logs; 46 cases paper; 22 crates 24 cases fish glue; 54 pkgs. pails; 1 case hardware; 29 do. woodenware; 3 do. drilling; 7,646 pieces staves; 480 pieces walnut lumber; 4 cases machinery; 1 pole; 1 case rakes; 9 cases scythes; 1 do. snaths; 2 do. agricultural implements; 1 do. samples; 1 do. washboards; 1 box whetstones; 1 case oars; 1 box sewer-pipe; 1 bbl. 1 box machinery; 2 cases brushes; 600 casks cider; 240 bags asbestos; 11,564 bush. wheat; 575 tierces lard; 15 do. tobacco; 52,005 sacks flour, 50 boxes bacon; 200 do. dyestuffs; 40 cases medicines; 4 do. soap; 26 bags 81 bales 6 cases leather.

GLASGOW, SCOT. *Steamer Siberian* (cld. March 22); 28,561 sacks flour; 21,411 bush. wheat; 330 pkgs. tubes; 13 do. oil-stoves; 3 pkgs. castings; 27,150 lbs. cheese; 1,300 cases canned meats; 1,589 bbls. apples; 1,910 pkgs. butter tubs; 45 pkgs. hams; 10 cases 35 bdls. handles; 170 tierces lard; 65 boxes plough castings; 9 cases hammer head axes; 400 head cattle; 10 bbls. ink; 1 do. oysters; 14 cases organs; 1 organ top; 4 bales 1 case 24 bdls. leather; 1 box books; 3,600 pieces staves; 340 empty bbls. and casks; 49 bbls. pegs.

Ask such questions as these: —

What is the difference between a barque and a schooner?

Where is Rosario?

What is the most valuable article exported to London?

Do we export much machinery to England? Why not?

Find four important exports from the above list.

Who are Baring Bros. & Co.?

What is meant by "4 do. soap"?

INTERESTING STATISTICS.

EDUCATION.

Number of Pupils in United States, 1902.

Primary Schools, Grammar Schools,	15,375,000;	about 88%
Private Schools	1,103,000;	" 6⅜%
High Schools	566,000;	" 3%
Academies	169,000;	" 1%
Normal Schools	43,000;	" ¼%
Universities and Colleges	119,000:	" ⅔%
Total	17,375,000	

Number of Teachers.

Male	122,000
Female	317,000
Total	439,000

Cost of the Common Schools.

Salaries	$150,000,000
Other expenditures	85,000,000
Total	$235,000,000

IMMIGRATION, 1903.

From Europe.	Males.	Females.	Totals.
Austria	147,984	58,027	206,011
Germany	24,861	15,225	40,086
Greece	13,934	456	14,090
Italy	186,966	43,656	230,622
Norway	16,249	8,212	24,461
Portugal	5,829	3,478	9,307
Scotland	3,963	2,190	6,153
Sweden	29,808	16,220	46,028
England	15,593	10,626	26,219
Ireland	15,956	19,344	35,300
Other Countries	119,341	56,889	176,230
Total from Europe	580,484	234,023	814,507
South America	405	184	589
Asia	23,776	6,190	29,966
Africa	121	55	176
West Indies	5,743	2,427	8,170
Grand Total, 1903	610,529	242,879	853,408
" " 1905	. . .	. . .	1,026,499

FOREIGN TRAVEL.

Number of Passengers, 1903.

From	Cabin.	Other than Cabin.	Totals.
Baltimore	1,729	2,293	4,022
Boston	12,468	25,672	38,140
Key West	16,610		16,610
New Orleans	4,486	241	4,727
New York	154,082	279,797	433,879
Philadelphia	2,859	7,829	10,688
San Francisco	4,341	8,012	12,353
Other Seaports	4,643	11,099	15,742
Total	201,208	334,943	536,151

Fig. 62.

Annual Industries of the World Total $65,425,000,000.

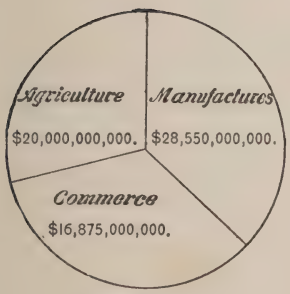


Fig. 63.

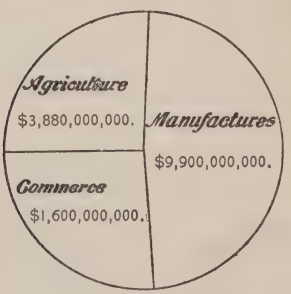


Fig. 64.

Annual Industries of the World.

Annual Industries of the United States.

Leading Productions of Leading Countries, 1900.

Arranged according to value, in most cases.

COUNTRIES.	PRODUCTIONS.	LOCALITIES.
AUSTRALIA.	*Wool, gold, wheat, hides, skins, tallow, frozen and tinned meats, and copper.*	Wool in New South Wales, Queensland, and Victoria; gold in New South Wales; wheat in Victoria, South Australia, New Zealand, New South Wales.
ARGENTINE REPUBLIC.	*Wool, "whole carcasses" (skins, hides, and tallow), linseed, cereals.*	On the pampas.
AUSTRIA.	*Grain, coal, iron, lead, salt, textiles, beet sugar.*	
BRAZIL.	*Coffee, caoutchouc, cotton, hides, sugar, diamonds, gold, cocoa, tobacco, nuts.*	Coffee between Rio and Parana; sugar in the eastern part; diamonds among the Bazilian mountains; caoutchouc along the Amazon.
CALIFORNIA, OR PACIFIC STATES.	*Wheat, gold, wine, fruit.*	Wheat in the Sacramento Valley.
CANADA.	*Timber, grain, flax, metals, fish, furs.*	Forests between Hudson Bay and St. Lawrence.
CHILI.	*Copper, wheat, nitrate of soda, wine.*	Copper-mines are in the north; nitrate in the newly acquired land from Peru; wheat in the central part.
CHINA.	*Rice, tea, silk, bamboo, sugar, cotton, indigo.* (A whole cargo cannot be obtained at one port.)	Rice in the south; tea west of Amoy; silk between 28° and 35° N.
CUBA.	*Sugar, rum, fruits, tobacco, coffee, mahogany.*	Coffee on north side; tobacco west of Havana.
CONGO FREE STATE.	*Caoutchouc, ivory, dyewoods, palm-nuts, amber, beeswax.* (Coal is sent from England to Paul de Loando.)	Most of these productions are found in great abundance along the banks of the Congo River.

LEADING PRODUCTIONS OF LEADING COUNTRIES, 1900 (*continued*).

COUNTRIES.	PRODUCTIONS.	LOCALITIES.
EGYPT.	*Cotton, cotton-seed, beans, sugar, rice, dates.*	Every thing is grown within a few miles of the Nile.
FRANCE.	*Woollen goods, wine, silk goods, beet sugar, silk-cocoons, brandy, wheat* (the leading crop, but not exported); *manufactured articles, such as buttons, feathers, flowers, steel, iron, gloves, laces, dress-goods, shawls, jewelry, etc.* (In France, five persons are engaged in agriculture to one in manufacturing.)	Woollen goods in the northern part, silk in the south central, and wine and olives in the southern part. Paris manufactures many articles calling for taste and ingenuity.
GERMANY.	*Cattle rearing, mining, and manufacturing are staple industries. Sugar and cereals for England, woollen manufacturing, cotton manufacturing, iron.*	Cotton manufactories are in Upper Germany, Saxony, and Alsace; silk is manufactured in Crefeld.
GREAT BRITAIN.	*Textile industries, metal manufactures, mining of coal, iron ore, and tin; cotton yarns, besides enormous agricultural products.*	Iron in Yorkshire, Staffordshire; coal in South Wales, north-eastern, and midland; textile industries,—lace in Nottingham; cotton in Manchester; woollen in Leeds; cutlery in Birmingham and Sheffield; shipbuilding on the Clyde; linen in Ulster; shawls in Paisley; carpets in Dundee; tin plates at Swansea; plumbago in the "Lake" district; tin in Cornwall.

LEADING PRODUCTIONS OF LEADING COUNTRIES, 1900 (*continued*).

COUNTRIES.	PRODUCTIONS.	LOCALITIES.
INDIA.	*Sugar, rice, cotton, grain, jute, opium, tea, indigo.* (The fruits of India are mango, guava, plantains, pineapples, melons, gourds. Five crops of rice yearly in some places. Lower Bengal has three harvests; viz., in May, September, and November.)	Rice everywhere, especially in Bengal; tea in Assam, high elevation; wheat in the Punjab; shawls in Cashmere; cabinet woods, etc., in Nepoul and Madras; Burmah, rice and teak; indigo in Bengal and Madras.
ITALY.	*Silks, wheat, olive-oil, minerals, sulphur, wine, sugar, marble, works of art.*	Sericulture, wine and olive-oil raising, in the north; sulphur is found in Sicily; marble in the northern part; Rome is the centre of art.
JAPAN.	*Silk, tea, rice, copper, tobacco, cattle, ships, camphor.*	
MEXICO.	*Silver, hennequen, cattle, sugar, cabinet woods, coffee, cereals, sarsaparilla, sulphur.*	The silver-mines are in the central and north-western part; hennequen in Yucatan; sugar near Vera Cruz; woods in the south.
MIDDLE STATES.	*Hay, coal, iron, petroleum, salt, etc.*	Hay in New York; coal in Pennsylvania; iron in Pennsylvania; petroleum in Pennsylvania; salt in New York; manufactured articles in New York, Pennsylvania, New Jersey.
RUSSIA.	*Grain, cattle, timber, oil, metals, cotton manufactures, woollen manufactures, linen, manufactures, flax, hemp, salt, sugar.*	

LEADING PRODUCTIONS OF LEADING COUNTRIES, 1900 (*concluded*).

COUNTRIES.	PRODUCTIONS.	LOCALITIES.
SOUTHERN STATES.	*Cotton, sugar, tobacco, rice, fruits, live-stock.*	Cotton, Alabama, Louisiana, Mississippi, etc.; sugar, Louisiana; tobacco, Kentucky and Virginia; rice, Carolinas; peanuts, Virginia; zinc, North Carolina; fruits and sponges, Florida; live-stock, Texas.
WESTERN AND CENTRAL STATES.	*Cereals, metals, timber, and manufactured goods.*	Wheat, California and Illinois; corn, Illinois; barley, California; oats, Illinois; lead, Wisconsin; copper, Michigan; iron, Missouri; gold, all through the Rockies; wine, California; silver in Nevada; manufactured articles in Illinois, Ohio and Missouri; lumber in Michigan.
WEST INDIES.	*Sugar, coffee, rum, logwood, fruits.*	
(Jamaica.)	*Sugar, molasses, cigars, tobacco.*	
(Cuba.)		

Leading Exports of Leading Countries, 1900.

Arranged according to value, in all cases.

COUNTRIES.	EXPORTS.	EXPORTING TOWNS.
AUSTRALIA.	*Wool, gold, wheat, coal, live-stock, coal, copper, preserved meat.* (Australia trades with Great Britain, United States, and France.)	Melbourne, Sydney, Brisbane.
ARGENTINE REPUBLIC.	*Animal products, grain, wool.* (1,000,000 cattle, 4,000,000 sheep, a year.)	Buenos Ayres, Rosario.

LEADING EXPORTS OF LEADING COUNTRIES, 1900 (*continued*).

COUNTRIES.	EXPORTS.	EXPORTING TOWNS.
AUSTRIA.	*Corn, animals, cereals, eggs, coal.*	Trieste.
BELGIUM.	*Iron and steel, linen, machinery, woollen yarns, hides, zinc.*	Antwerp.
BRAZIL.	*Coffee, caoutchouc, sugar, hides, cotton, cocoa.* (Exports, £20,000,000.)	Rio Janeiro, Bahia, Pernambuco, Para, Santos.
CAPE OF GOOD HOPE.	*Diamonds, gold, and wool.*	
CANADA.	*Timber, fish from Newfoundland, animals, animal products, coal, wood pulp.*	Montreal, Toronto, Quebec, Halifax, Winnipeg.
CHILI.	*Copper ore, nitrate, silver, wheat, wool.* (Chili trades with Great Britain, Germany, France, Peru.)	Valparaiso.
CHINA.	*Tea* (1900, 22,000,000 lbs. to England alone), *silk, beans, straw braid, hides, cotton, fire-crackers.* (China exports to Great Britain, United States, Japan.)	Canton, Hong Kong, Shanghai.
CUBA.	*Sugar, tobacco, tropical fruits, mahogany, metals, copper, sponges.*	Havana, Matanzas, Kingston, Port Antonio, Bahamas.
CONGO FREE STATE.	*Caoutchouc, ivory, copal, palm-nuts, wax, gums, cocoa.* (Twenty-five steamers a month now reach the mouth of the Congo.)	Borna (Vivi), St. Paul de Loanda.

LEADING EXPORTS OF LEADING COUNTRIES, 1900 (*continued*).

COUNTRIES.	EXPORTS.	EXPORTING TOWNS.
EASTERN STATES.	*Manufactured goods, lime, lumber, fish, marble, slate, granite.*	Boston, Providence, Portland, Gloucester.
EGYPT.	*Cotton* (558,000,000 lbs. exported in 1903, four-fifths of all the exports), *cotton-seed, beans, wheat, tobacco.* (Trades with Great Britain (½), Turkey, France.)	Alexandria.
FRANCE.	*Woollen manufactnres, wine, silk, dairy produce, brandy, sugar, clothing.* (France exports to Great Britain, Belgium, Germany, United States, Switzerland.)	Marseilles, Havre, Bordeaux.
GERMANY.	*Textiles, iron and hardware products, chemicals, toys.* (Germany exports to Great Britain, Austro-Hungary, Russia, Holland.)	Hamburg, Bremen, Dantzic, (grain).
GREAT BRITAIN.	Given in detail on p. 386.	
HOLLAND.	*Cereals, butter, iron, textiles, copper.*	Amsterdam, Rotterdam.
INDIA.	*Cereals, cotton, seeds, opium, jute, tea, rice, wool, indigo.* (India exports to Great Britain, China, France. Germany, United States.)	Calcutta, Bombay, Madras, Malabar coast, Coromandel coast, Pondicherry, Rangoon.

LEADING EXPORTS OF LEADING COUNTRIES, 1900 (*continued*).

COUNTRIES.	EXPORTS.	EXPORTING TOWNS.
ITALY.	*Silk, wine, olive-oil, eggs, oranges, coral, hemp and flax, sulphur.* (Italy exports to France, Switzerland, Austria, Germany, Great Britain, United States. Exported a little more silk than Japan.)	Genoa, Leghorn, Messina, Palermo, Naples.
JAPAN.	*Silk, tea, rice, cuttle-fish, copper, camphor, coal.* (Japan exports to United States, China, France, Great Britain.)	Yokohama, Kobe, Osaka, Nagasaki.
MEXICO.	*Silver, hennequen, woods, coffee, hides and skins, vanilla, tobacco, gold, cotton, honey, beans, orchil, copper, sarsaparilla.* (Mexico trades with United States, Great Britain, Germany.) (Hennequen is exported from Merida, Yucatan, silver bullion from Paso, and coffee and goat-skins from Vera Cruz.)	Vera Cruz, Merida, Paso del Norte, Mazatlan, Acapulco.
MIDDLE STATES.	*Manufactured goods, flour, provisions, cotton* (raw), *coal, petroleum, agricultural implements.*	New York, Philadelphia, Buffalo, Baltimore.

LEADING EXPORTS OF LEADING COUNTRIES, 1900 (*concluded*).

COUNTRIES.	EXPORTS.	EXPORTING TOWNS.
RUSSIA.	*Corn, flax, wood, oils, hemp, animals.* (Russia exports to Great Britain, Germany, France, Austria, Holland, Italy.)	Odessa, St. Petersburg.
SOUTHERN STATES.	*Cotton from Alabama and Mississippi, sugar from Louisiana, rice from North and South Carolino, tobacco from Kentucky, fruits from Florida.* (United States exports to Great Britain, Germany, France, Canada, Belgium, Holland, Cuba.)	New Orleans, Savannah, Galveston, Richmond.
WESTERN STATES.	*Grain, lumber, iron, copper, animal products.*	Chicago, St. Louis, Minneapolis.
UNITED STATES.	*Cotton, gold and silver, breadstuffs, mineral oil, bacon and hams, lard, animals, tobacco, wood.*	New York, New Orleans, Boston, San Francisco, Philadelphia, Baltimore, Galveston.

Directions to the Teacher. — Correct the textbook by these tables, explaining to the children that these facts are arranged according to value, from the most recent statistics.

Let the children find the difference between the productions and the exports of countries. Are the imports of one country the productions of another? Let the children have the pleasure of hunting for illustrations.

By what means, under what flag, are the productions or exports of one country carried to another? e.g., England and United States. These statistical tables are only so much MATERIAL with which to build a beautiful commercial structure, under the guidance of the architect, — the teacher.

Leading Imports of Different Countries, 1900.

Arranged according to value.

COUNTRIES.	IMPORTS.	FROM
ARGENTINE REPUBLIC.	*Textiles, food stuffs, machinery.*	England, United States.
AUSTRALIA.	*Linen and silk goods, woollen goods and wool, sugar, iron and steel, hardware, tea, wheat, timber, books, machinery.*	England, United States, Germany, New Zealand.
AUSTRIA-HUNGARY.	*Cotton, wool, coal, coffee, tobacco, hides, silk.*	
BELGIUM.	*Grain, wool, hides, rubber, seeds, metals.*	
BRAZIL.	*Food stuffs, iron, coal, machinery, wine.*	Great Britain, United States.
CAPE OF GOOD HOPE.	*Textiles, iron, food stuffs.*	Great Britain.
CANADA.	*Steel manufactures, coal, cotton, woollen manufactures, tea, timber, and silk.*	United States, Great Britain.
CHILE.	*Textiles, iron, machinery, oil.*	Great Britain, Germany, Peru, United States.
CHINA.	*Opium* (from Benares, Malwha, and Patna,) *textiles, metals, woollen manufactures, oil.*	
EASTERN STATES.	*Textiles, sugar, tea, coffee, soft coal.*	England, France, Cuba, China, Brazil.
EGYPT.	*Cotton manufactures, woollen manufactures, coal, provisions, machinery and iron.*	England, Austria-Hungary, Italy, Turkey.
FRANCE.	*Coal, cotton, wool, silk, timber, hides, wine, grain, coffee, machinery.*	England, United States, South America, Russia, Germany, Belgium.

LEADING IMPORTS OF DIFFERENT COUNTRIES, 1900 (*concluded*).

COUNTRIES.	IMPORTS.	FROM
GERMANY.	*Grain and flour, wool, raw cotton, coffee, tobacco, raw silk, hides, wine, coal, iron, machinery.*	England, United States, Austria-Hungary, Russia, France.
GREAT BRITAIN.	Imports given in detail on p. 387.	
HAMBURG.	*Sugar, woollen manufactures, coffee, cotton manufactures, cattle, wool.*	Great Britain, United States, Germany.
HOLLAND.	*Iron, grain, copper, coffee, sugar.*	Prussia, Great Britain, Belgium.
INDIA.	*Cotton manufactures, copper, railway material, iron, sugar, provisions, woollen goods, clothing, drugs, oil.*	England, Belgium, Austria-Hungary, Germany, China, France, United States.
ITALY.	*Cotton, grain, coal, hides, machinery, silk, sugar, wool, iron, fish, coffee, timber.*	England, France, United States, Austria, Germany.
JAPAN.	*Raw cotton, rice, sugar, cotton manufactures, mineral oil, iron; textiles.*	United States, England, India, China, Germany.
MEXICO.	*Textiles, iron, machinery, coal.*	United States, England, France, Germany.
RUSSIA.	*Cotton, coal, tea, wool, machinery, wine, textiles, metals.*	England, United States, China, France, Germany.
UNITED STATES.	*Silk, sugar, coffee, chemicals, hides, cotton goods, rubber, fiber, iron, steel.*	England, Germany, France, Brazil, Cuba, Canada, Mexico, Netherlands, Japan, Italy.

Exports of Great Britain, taken from Parliament Reports for 1903.

Countries to which exported named according to value, the largest first.

ARTICLES.	COUNTRIES.
Beer and Ale.	Australia, United States, Belgium, Africa.
Books.	Australia, United States, India, France.
Coal.	France, Germany, Italy, Sweden, Russia, Egypt, Spain, Denmark, Cuba, Brazil, India, etc. ($26,000,000 in 1903.)
Copper.	India, France, Germany, Holland.
Cotton (twist and yarn.)	India, Germany, France, Turkey, Belgium, Holland.
Cotton (manufactures).	India, China, Turkey, Brazil, Egypt, Japan, Java, France, etc. ($375,000,000 in 1904. Most valuable export.)
Lace.	United States, Germany, Belgium.
Earthern Ware and China.	United States, Australia.
Hardware and Cutlery.	Australia, United States, and Germany.
Iron (pig).	United States, Germany, Italy, Holland, Japan.
Iron (rails).	India, Australia, Canada, Argentine Republic, Sweden.
Leather.	Germany, France, Belgium, United States.
Machinery.	India, Australia, Italy, United States, Argentine Republic, Russia.
Silk Twist.	United States.
Woollen Manufactures.	France, Canada, Belgium, Germany, United States, Japan, China.

Imports of Great Britain.

The leading imports of this, the greatest commercial country in the world, and the countries from which the same are brought, are given below. The countries are arranged in order of amount in *value*, the largest always being placed *first*. It should be remembered that Great Britain *exports* a great deal of these commodities to the various countries with which she trades.

[**Directions to the teacher.** — The United States leads in how many cases? Let the teacher put on the board such of these as she thinks wise to teach, and interest the children in these selected cases by arousing the imagination through a few questions.

The following items in reference to England's imports are taken from Trade, Navigation, and Shipping Annual Statement, presented to Parliament, for 1903, No. 90.]

Leading Imports of Great Britain for 1903.

Countries named according to value.

ARTICLES IMPORTED.	FROM
ANIMALS.	United States, Canada, Argentina, Holland, France, Chili.
BACON AND HAMS.	United States, Denmark, Germany.
BEEF.	United States, Argentina, Canada, Australia.
BOOKS.	United States, Holland, Germany, France.
BRANDY.	France.
BRIMSTONE.	Italy.
BUTTER.	Denmark, France, Holland, Sweden.
CAOUTCHOUC.	Brazil, West Africa, Portugal, Straits Settlements.
CAOUTCHOUC MANUFACTURES.	Germany, United States.
CIGARS.	United States, Holland.
COCHINEAL.	Canary Islands, Mexico.
COCOA.	West Indies, Portugal, Ceylon, Ecuador.
COFFEE.	India, Brazil, Colombia, United States.
COPPER.	Spain, Peru, Chili, Mexico, Cape of Good Hope.
CORN.	United States, Russia, Argentina, India, Canada.
COTTON (raw).	United States, Egypt, India.
COTTON (manufactures).	Belgium, Holland, Germany.
CUTCH AND GAMBIA (dyes).	Straits Settlements, Burma.
DYES (aniline).	Holland, Germany.
EGGS.	Russia, Denmark, Germany, Belgium.
FEATHERS.	South Africa, France, Holland.
FISH.	Norway, Canada, Portugal, Holland.
FLAX.	Russia, Belgium, Holland.
FRUIT (apples).	United States, Belgium, Canada, Portugal.
FRUIT (oranges).	Spain, Italy, Turkey.
GUTTAPERCHA.	Straits Settlements, Holland.
HEMP.	Philippine Islands, Italy, Russia, Straits Settlements, Germany.
HIDES.	India, Belgium, Italy, France, China.
INDIGO.	Bengal, Madras, Central America.
IRON (ore).	Spain, Australia, Algeria.
IRON (bar).	Sweden, Belgium, Holland.

LEADING IMPORTS OF GREAT BRITAIN (*concluded*).

ARTICLES IMPORTED.	FROM
IVORY.	Africa, Belgium, India.
JUTE.	Bengal, Madras.
LACE.	Belgium, Germany, France, Holland.
LARD.	United States, Canada, Denmark.
LEAD.	Spain, United States, Germany.
LEATHER.	India, United States, Australia, Germany, Holland.
LINEN.	Belgium, Germany, Holland.
LOGWOOD.	West Indies, Honduras, Hayti, Mexico.
MEAT (mutton).	New Zealand, Argentina, Holland.
OLIVE-OIL.	Spain, Italy, France.
PETROLEUM.	United States, Russia.
QUICKSILVER.	Spain, Italy.
RAGS.	Germany, Belgium, France.
RICE.	India, Holland, Germany.
ROSIN.	United States.
SALTPETRE.	India, Germany, Holland.
SILK (raw).	China, France, Italy, East India.
SILK (manufactures).	France, Holland, Belgium.
SILK (ribbons).	France, Belgium, Holland.
SILVER ORE.	Germany, Australia, Chili, Peru, United States, Spain.
SUGAR (raw).	Germany (beet-root), Argentina, West Indies, Java.
TALLOW.	Australia, United States, Uruguay, Argentine Republic.
TIN.	Straits Settlements, Australia, Holland, Chili.
TOBACCO.	United States, Holland, Turkey.
TOBACCO (cigars).	United States, Holland.
WINE.	Portugal, France, Spain, Holland.
WOOD (timber).	Russia, Sweden, Canada, Germany, Africa.
WOOL (raw).	Australia, New Zealand, Africa, Argentina, Turkey.
WOOLLEN MANUFACTURES.	France, Holland, Germany, Belgium.

CHAPTER XVIII

MATHEMATICAL GEOGRAPHY

THE contemplation of celestial things will make a man both speak and think more sublimely and magnificently when he descends to human affairs. — *Cicero.*

THE heavens declare the glory of God; and the firmament sheweth his handywork. — *Psalms.*

BOOKS FOR CONSULTATION

Ball's Astronomy.
Bowen's Astronomy by Observations.
Champlin's Young Folks' Astronomy.
Crocker's Methods of Teaching Geography.
Fellowes's Astronomy for Beginners.
Geographical Readers (first and second volumes)
Giberne's Among the Stars.
Jackson's Astronomical Geography.
Langley's New Astronomy.
Lockyer's Astronomy. (Primer.)
Moore's Overhead.
Proctor's various Books on Astronomy.
Sharpless and Philips's Astronomy.

CHAPTER XVIII

MATHEMATICAL GEOGRAPHY

DIFFICULTIES OF THE SUBJECT — DIRECTIONS TO TEACHERS — FIRST AND SECOND YEARS — OBSERVATIONS — STUDY — READING AND TALKING — SELECTIONS FROM GEOGRAPHICAL READERS — A SONG OF THE DIRECTIONS — THIRD AND FOURTH YEARS OF STUDY — OBSERVATION OF THE SUN, EARTH, AND MOON — EXPERIMENTS — STUDY FORM OF EARTH, SIZE OF SUN AND EARTH — READING — FIFTH AND SIXTH YEARS — OBSERVATIONS OF VERTICAL STICK AT NOON, POSITION OF CONSTELLATIONS, MOVEMENT OF STARS, ETC., OF THE MOON, SHAPE OF THE EARTH — STUDY — REVIEW PREVIOUS CLASS WORK, SOLAR SYSTEM, EARTH'S DAILY MOTION, REVOLUTION, CHANGE OF SEASONS, THE SUN, MOON, TIDES — READING AND TALKING

IN some schools very little mathematical geography is attempted beyond the definitions given in the first part of the geography. These definitions being placed first in the book, are frequently learned among the first lessons assigned in the study; and the child, neither understanding them, nor being interested in so abstruse a subject, very naturally and properly develops a hatred for geography. But no set of children ever read *Overhead*, by Misses Moore and Nichols, without being fascinated with the story, and without absorbing every astronomical fact therein set forth. The very youngest children are delighted to watch the moon or the evening star, and with a little help they can make important observations in reference to these heavenly bodies. The terrible definitions can be turned into drawing and object lessons, much to the joy of both teacher and pupil.

There are a few schools where too much is expected of young children in this branch of geography, — too much for

the time, too much for the age, too much for the necessities of the case.

In order to help teachers make this often-disliked subject interesting and attractive, and to guard against teaching more than seems warranted in the time allotted, and the age of the pupils, we have arranged the subject in this chapter according to the light of past experience. In a perfectly graded school, we think this much can be taught with profit and pleasure.

Directions to the Teacher. — Assign to the younger children the simplest observations, a few easy and necessary definitions evolved from drawing and examining objects, and then read to them, or tell them a few stories, about the stars and the earth. To the older classes the more difficult work can be given; still reserving to the graduating class all the hardest portions of the subject.

FIRST AND SECOND YEARS OF STUDY

The teacher should encourage the children to make, during the first part of the school-year, the following

1. Observations.

1. Notice the movement of the sun through the sky during any bright day. Describe it, telling the beginning, middle, and end of the journey. Where is the sun travelling during the night? What other body goes through the sky in a similar way?

2. Tell about the moon's movements.

3. Observe the stars. Try and find some prominent groups, such as the Great Dipper. In what part of the sky is it? Is the North Star near the Great Dipper? Try and

find it, if you can. Find two or three other groups or particular stars.

4. At the beginning of school, set up a stick four feet long, in a vertical position in the yard. Notice at noon the direction in which the shadow falls. What points of the compass are thus marked out? North and south. Notice the length of the shadow.

Or drive a nail into a narrow piece of board, so that it will stand up perpendicularly. At twelve o'clock place the board on a level window-seat in a south window, and mark the length of the shadow, with a pencil, Sept. 21. Do the same the next week; in October; in November; and on Dec. 21, or 22, if the sun shines at noon on those days; then again at various times subsequently; and write out the results of the observations. These should be shown to the teacher for correction or explanation.

The teacher can easily teach the young children many simple facts by little *experiments* such as the following: —

Suspend an orange or apple by a string, and place pins in the orange in various parts pointing towards the centre, and explain that they all point *downwards* as far as the orange is concerned. Take one out from the side, and show them that it is moving *up*.

Show with an orange the difficulty of describing where a star cut in the peel is situated on the surface of the orange, till poles are designated by the axis (a wire). Then draw a circle with colored crayon around the orange, *equally* distant from the poles, and let the children give it a good name, — equator. The star can now be easily located.

From the direction of the shadow at noon, north and south are determined; at right angles is east and west.

Locate these cardinal points upon the floor of the schoolroom near the door, where every child must pass over them in coming to school. Have the children explain the direction in which each one's front door faces, the direction of the various streets, etc.

2. Study.

A line has length without breadth or thickness. Illustrate on the board and paper. Learn the names of the different straight lines, as perpendicular, horizontal, vertical, oblique, etc.

Learn the difference between a curved and a straight line.

A straight line is the shortest distance between two points.

A curved line changes its direction at every point, but a straight line does not change its direction at any point.

Illustrate the difference, by drawing on the board or paper.

A surface has length and breadth without thickness. Illustrate by using a sheet of paper, the blackboard, the top of the desk, the outside of the orange, globe, etc.

Show the difference between a plane surface and a curved surface.

Learn the difference between a plane surface and an uneven surface. Illustrate. A plane is a surface upon any part of which a straight line may be drawn. Illustrate by using the edge of a ruler to represent the straight line, and placing this upon the top of the desk, on the side of the room, on the blackboard, on the floor. Planes may be perpendicular, oblique, or horizontal; but we usually think of them as horizontal, like the floor.

Observe the difference between a circle and a square, or a rectangle. Illustrate.

A portion of a plane bounded by a line is generally called a geometric figure, such as circles, squares, rectangles, triangles, etc.

A circle is a plane bounded by a curved line, every point of which is equally distant from a point within called the centre. Draw circles of different sizes, in different ways.

Learn, draw, and name the different parts of a circle, such as circumference, diameter, radius, arc, etc.

Learn how many radii make a diameter; what a semi-circle is; a semi-circumference. What is the difference between a circle and a circumference? Learn the difference between a circle and an oval, or ellipse. Draw an oval.

A solid has length, breadth, and thickness. Illustrate with a cube, a book, etc. Learn the difference between a cube and a sphere. Learn different parts of a sphere, as surface (curved), diameter, radius, centre, etc.

From a globe learn the names of the poles, the various circles, such as equator, other circles parallel, circles crossing these, such as meridian, or *mid-day*, circles. The latter all pass through what two points? Then learn the names of the two tropics; the two Arctic circles.

The form of the earth is also shown by the globe, and by an orange. It is usually called spherical, not round. Learn the difference between the two.

Make on the board a circle, and draw the diameter. Children do the same. Show them, by cutting an apple or orange into two equal parts, how the circle represents on a flat surface the curved half-surface of the earth, called a hemisphere.

Draw circles about the orange at the right places, to divide the same into the different zones, or belts, in reference

to the heat. Draw straight lines across the circle on the board, to correspond with these circles. Name these belts at first, (1) the hot belt, (2) the cool north belt, (3) the cool south belt, (4) the cold north belt, (5) the cold south belt.

3. Reading and Talking.

The Stick and the Shadow.

During breakfast Harry said a great deal about the grand sunrise. After the meal was over they all made their way to the sands. The sun, which a few hours before Harry had seen rising out of the golden ripples in the east, was now much higher in the sky. His rays, too, had grown so hot that the people looked about for shelter.

Harry's mother and father sat under the side of a boat in the shade, whilst the children, with naked feet, ran off to paddle in the water. And fine sport they had.

With her fishing-net his sister Alice ran after lively little shrimps. Harry was busy with his pretty toy boat.

But the sun growing hotter still, the children ran off to the shade of the boat. Great was their surprise when they found that the boat no longer threw a shadow to shelter them. The fierce rays came pouring down on the side of the boat, as if it would scorch them. And yet an hour before it was so cool there. This was a great wonder to the children.

"Stop with me a little," cried their father. "I have a good lesson to teach you about this great sun and his doings."

"Why, the sun is always on the move," said Harry. "I wish he would stand still a bit, and let me cool myself."

"Yes, my boy; and it is just because he always seems to move on that he is so very useful. This makes him a good old time-keeper. Let us watch him. Stand my stick upright in the sand. What do you now notice?"

"*A shadow!*" cried Harry. "*A shadow* thrown by the stick on the yellow sand."

Their father made a groove where the shadow fell, and with much care cut a line on the sand to show its length. It was then eleven o'clock. The children played an hour longer, and came back. There were still the stick and the shadow, — the same stick, but not the same shadow.

"Why, father, look at the shadow," cried Harry. "See how much *shorter* it is, and it has left the old groove. It has gone more to the east. Why can this be?"

"That is just what I wished to hear you ask about, my children.

"I could have told you the story of the stick and the shadow before, but I wished you to see this with your own eyes.

"The fact is, the sun not only seems to move on in his daily course, but he gets higher and higher in the sky for a certain time. And, you see, as he rises higher he throws shorter shadows. You can now run and play an hour longer."

At one o'clock the children came back. Where was the shadow then? It had again changed its place, but had now grown longer, — just as long as it was at eleven.

"How strange!" cried Harry. And it began to puzzle him.

"You see," said his father, "at twelve o'clock the sun stood as high as he could in the sky. Now he is sinking lower and lower.

"We call the time of the day when the sun is at his highest, *mid-day*, or twelve o'clock. The part of the heavens in which he is then seen is called the *south*. Thus you have learnt one more useful fact, — the sun is seen in the south at noon, or twelve o'clock.

"Let us now go home to dinner."

LEARN. — (*a*) **The sun reaches his *highest point* in the heavens at *twelve o'clock*, or *mid-day*.**

(*b*) **The sun shines in the "*south*" at *mid-day*, or *noon*. — *Albert Geographical Reader*.**

Size of the Earth.

"Shall I tell you more about the size of the earth?" said the father.

"Oh, yes! if you please."

"Well, since I have been a sailor, I have found, that, though the earth seems large, yet it is not such a very big body after all.

"We can get about so quickly that places that we once thought a long way off seem near to us now. When I was a little boy like you, it took more than a week to go in a coach from one end of this country to another. Now we can go the same distance in half a day.

"Not only can we get about very quickly on land, but on the sea fast steamboats can take us from one country to another nearly as quickly as a train could. My ship can steam about twenty miles an hour, and I can go to America in about seven days and a half.

"The first man who sailed round the world took more than two years. How long was I gone on the voyage before this?"

"I know," said the boy. "When you sailed, it wanted six months to my birthday; and you said you would try and get back in time for some cake, and that you would bring me a parrot as a birthday gift."

"And I reached home a week before. — Hark! what does Polly say? 'Go ahead! Port your helm! Easy! Stop her!' — And yet I had been quite round the world, and some ships can do the voyage in less time than that.

"And there is something else that makes me feel that the earth is not so very large. When I was just half-way round the world, I wanted to speak to those who own the ship at home. So I sent a message to them after dinner, and I had an answer back again by the next morning. Do you know how I spoke to them?"

"You must have sent a telegram."

"That is just what I did; and it made me feel, that, after all, the world is not so very big." — *Geographical Reader*.

The Mariner's Compass.

"Put on your hats and jackets, children. Let us talk to the sailors, and see the ships."

When they reached the harbor, their father took them over a vessel, and showed them the compass.

"Oh! what a funny clock!" cried Alice. "What a pretty clean face it has!"

"It is not a clock at all," said her father. "We call it a *compass*. By means of this, sailors can find their way about the sea better than most landsmen can travel through the country. So it is known as the sailor's or *mariner's compass*.

"The compass has only one hand, called the *needle*. This is made of steel, and it is a *magnet*."

"A magnet, father!" said Harry. "The one you gave me was like a horse-shoe."

"All magnets are not made like horseshoes. If a magnet is made straight and flat, and hung up on a point in the middle, one end of it will always turn to the north, do what you will with it.

"On the card below the needle there are as many as *thirty-two* points. Of course, the chief of these are *north*, *south*, *east*, and *west*. So sailors never care where they are: they neither want sun nor star to guide them."

"How strange!" said Alice. "What makes the needle turn always to the north?"

"That, my child, I cannot tell. It is one of the greatest of all wonders. We only know that it does so, and that the north is the greatest of all magnets."

The children went back in a great puzzle.

Every ship carries at least one compass, by which the sailors see in which direction they are going, and which way they must *steer* the vessel.

When the north is found, either by the help of the north star or the compass, it is easy to find out the other points of direction.

With your face to the north, your back is to the south, the east is on your right hand, and the west is on your left hand. — *First Geographical Reader.*

A Song of the Directions.

"I'm off to the SOUTH," sang the sun to the moon,
As he bade her good-by at the door.
"You know I must shine there exactly at *noon*,
Or the world would trust me no more."

"Oh, stay, dearest spouse!" sighed the moon to the sun:
"Ere you go, love, partake of this feast.
'Tis a very long journey you have now to run,
For at *morning* you start from the EAST."

"'Tis true, fairest moon. You're both lovely and kind,
But your thoughtfulness pleases me best.
How good it was of you my breakfast to mind,
For at *evening* I'm called to the WEST."

"I'm so glad," said the moon, as her breakfast she ate,
"That you *ne'er* have to shine from the NORTH,
For to melt all the snow there would keep you too late."
Here he kissed her, and took his way forth.

"Be as quick as you can," through her tears sobbed the moon
(Those tears are the dewdrops of morn).
"Yes, yes!" cried the sun, "I'll come back to thee soon;
I'd ne'er leave my own true love forlorn.

"And when my work's done, my steps I'll retrace,
So weary not while I'm away;
For at night I shall shine on thy beautiful face,
Though the cold world needs me by day."

Philips's Geographical Reader

The North Star.

Fixed in the north shines the bright Pole Star,
Guiding the sailor's way from afar;
Round and round it all other stars go,
But the Pointers always the pole's place show.

THE THIRD AND FOURTH YEARS OF STUDY

1. Observation.

The pupils at the beginning of the year should now observe with care the exact position of the sun in the morning, at noon, and at sunset, and report to the teacher. Then the next day, with a little help from the teacher, mark these positions carefully, so they can be compared afterwards if changes take place. Take these observations once a week; report changes. Sept. 21 observe carefully the path of the sun through the heavens, for the sun on that day moves over the equator on what is called the

celestial equator. Draw a line, if possible, in the yard, between the points of rising and setting sun. Before noon drive a stake in this line, and at noon — true time, not standard time — observe the direction of the shadow cast by the stake. See if the first line and this shadow-line are at right angles. Prolong the shadow-line across the first line, and test with compass to find directions of the four cardinal points.

Which one of these lines indicates the *mid-day* circle? Does meridian mean mid-day circle? (Medidian changed, for ease in pronunciation, to meridian, means middle day.) Find out what streets or roads run in the same direction as the meridians; what ones cross them at right angles, and therefore run in the direction of the parallels. In going home, do you travel on a parallel, or a meridian, or neither?

Take an orange or an apple, and divide the sphere into two equal parts, by a line passing around it, making a large circle. Call this line an equator. Draw a small circle around parallel to the equator, on each side, one-fourth of an inch distant. This encloses a belt, or zone. Draw another circle round, one-third of an inch distant from each of the last circles. Two belts, or zones, will be thus produced, and two circular belts, one at each pole, or extremity of the axis. Give these zones appropriate names.

Then let the children find, on the globe, the different parallels. Show them that all these are circles, but not circles of the same size.

Show how these circles help to locate places, especially on the great oceans, north or south of the equator. Explain the meaning of "40th parallel."

Ask the children if it is as important to have lines, or

circles, to help locate places in reference to east or west? If it is, we need a line to count from. Once every nation counted from its own national capital; but every year more and more people are using Greenwich, near London, as the *first line*, or the line from which so many people reckon distance, east or west, usually called the *first* meridian.

Draw lines on the orange, or slate globe, to show these lines going north and south round the globe. They all pass through the poles. Ask the children if they are parallel.

Let them see them on the globe. Let them open their book to the map, and find the same lines.

These lines, running north and south, are called meridians, —mid-day lines,—because all the places along one of these lines have mid-day at the same time.

Explain, that, for convenience, each circle is divided into three hundred and sixty equal parts; and each part is called a degree. Therefore the distance round the earth is called 360°; one-half round would be 180°; one-fourth way round, 90°.

Show the pupils that Springfield, Ill., is just one-fourth of the distance round the earth from London. Hence it is called 90° west of London.

The Feejee Islands, Gulf of Anadir, Eastern Siberia, or New Zealand, are each about half-way round the world, or on the opposite side of the earth from London. Hence they are said to be nearly 180° west of London.

Now explain: longitude, the distance measured east or west from any given meridian, as the one running through Greenwich; latitude, the distance measured north or south from the equator.

Moon.

Locate the position of the new moon in September, and report to the teacher where and when observed. Illustrate by drawing. Keep the drawing. In a few evenings look at moon again, and notice change in appearance. Draw on paper the new appearance.

In seven days from first observation make another at sunset. If the moon is overhead see if that half towards the observer is illumined. Draw again.

About fifteen days from new moon make another observation, and report to teacher appearance, where in sky, and when seen. Draw. Learn good names for these changes, called *phases* of the moon.

Experiment.

Show the alternation of day and night, by some such experiment as the following: —

On a dark day, or near close of afternoon session in winter months, have a small kerosene-lamp (with a tin reflector if convenient, although not necessary if room is pretty dark), and a small hand-globe.

Show that only one-half is illumined at one time. Then, by rotation, show that every part may become illumined alternately. Place the lamp on the eastern side of the room, and let it represent the rising sun. Ask the children to think of the sun as standing still, just as the lamp is, and the earth turning as the globe is turned. Fasten a small piece of paper on the globe to represent where you live, and place or hold the globe so the north pole will point towards the north, and then turn from west to east.

The children will be able to see the white paper pass into the light, — sunrise; come directly before the lamp, — noon; and pass into the dark half, — sunset.

Draw on the board a circle to represent the earth, with a radius of twelve inches or more. Outside of this draw a larger circle, with a radius three inches longer, to represent the atmosphere about the earth. Let a wide black-

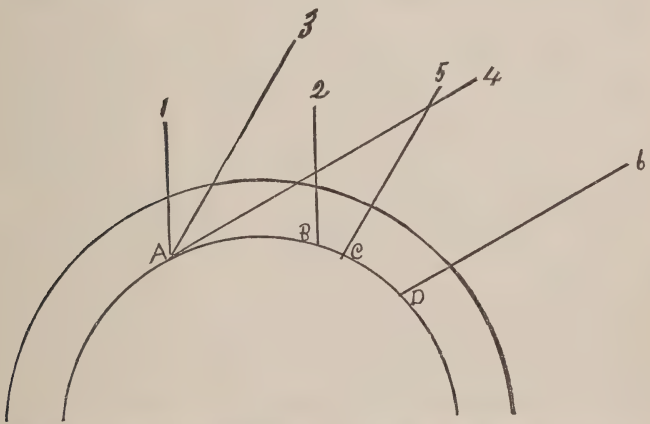


Fig. 65. — Diagram showing the Difference between Perpendicular and Sloping Rays of Light and Heat.

board ruler represent rays of light, or, better, a solid oblong. Place this on the board above the circles, to represent vertical rays, and draw the lines A1 and B2, Fig. 65.

Then incline the ruler at various angles, and draw such lines as A3, C5, and A4, D6. Then show the children that the distance AD is almost twice AB; hence the sloping rays cover much more ground, and are not so hot in consequence. Then the sloping rays near morning and sunset

pass through more masses of air, and consequently lose a part of the heating and lighting power.

The effect of the difference in the heating-power of perpendicular and oblique rays is shown whenever persons travel north from the south. As the person travels farther north, the sun seems to travel farther south; and the obliquity of his rays increases, and their heating-power consequently decreases. And this is always the result noticed.

Lead the pupils to notice how many sides of a ball they can see at once. How much of the globe can be illumined at once by a lamp in a darkened room? In order that a person may see the other side of a ball without changing his position, the ball must be ———? [Pupils tell.]

Experiment, and find out how to illumine the other side of the globe.

2. Study.

The Form of the Earth. — Ancients believe the earth was ***flat,*** — a great circular plain.

Now believed to be nearly ***spherical,*** *because*

(*a*) Men like Magellan, Blake, and Cook have sailed around it;

(*b*) Ships seen on the ocean show the sails first, and hull afterwards;

(*c*) Sailors approaching land see the tops of the mountains, and the tops of the high buildings, first.

What would a sailor do who wanted to have the last look at the land he was leaving? Climb up the rigging.

When farmers in Dakota are travelling in the valley of the Red River of the North, they see first the tops of trees and houses in the distance, then the middle part of the object,

and by and by, as they approach nearer, the base of the house, the trunk of the tree; which shows how very level this section is, formed at the bottom of a great inland lake in glacier periods, and it also proves the rotundity of the earth.

Size of the Earth. — Learn the diameter, about eight thousand miles; then the circumference, three and one-third times that, or about twenty-five thousand miles.

Find how long an express-train, going at the rate of forty miles an hour, would require to go round the earth at the equator, or on a meridian. It would take a steamship about four months.

Review the circles learned in the previous year.

What is meant by the centre of a circle? the plane of a circle? Cut an apple to illustrate. Learn what circles are *great* circles, and what *small* circles.

All these circles are divided into three hundred and sixty parts, called *degrees*. Angles are thus measured. When we speak of its being ninety degrees from the equator to the pole, we mean it is one-fourth of three hundred and sixty degrees, or one-fourth of the way round the earth.

Learn the meaning of latitude and longitude, as defined in any geography. What use for these terms?

Illustrate the use of the terms, on the globe. Draw maps, and mark off the latitude and the longitude. Reckon the longitude from Greenwich.

From what place do we reckon latitude? How many degrees of each can a place have?

Sun and Earth.

The moon is a great distance from the earth. But if we should hollow out the sun, and place the earth in the centre, there would be room enough for the moon to go on moving in her present orbit at two hundred and forty thousand miles from the earth, — all within the globe of the sun itself.

Draw a circle on the board, half an inch in diameter, and let it represent the earth. Draw another, fifty-four inches in diameter: the latter will represent the size of the sun.

The earth's diameter is eight thousand miles; that of the sun, eight hundred and sixty thousand miles.

The sun is so far away from the earth, that, if an express train had started when the "Mayflower" sailed to this country with the Pilgrim Fathers, it would not yet have reached us, although travelling day and night. The fare for such a journey, at the regular rates, would be nearly two million dollars.

Learn the meaning of the word "rotation." Illustrate with top, wheel, and globe. Learn where the axis and the poles are. How long does it take the earth to rotate, or spin, once?

How many times does it rotate in a year like 1889? 1888?

The sun stands still, and the earth's rotation produces day and night. Thus every place comes in sight of the sun, making *sunrise* for that place; every place arrives opposite the sun, making *mid-day;* every place loses sight of the sun, making *sunset.*

Read to the Class

at the first appropriate opportunity, some such selection as the following: —

Shape of the Earth.

Though the boys had very much enjoyed their holiday trip to the seaside, as well as their extra walks in the fields and woods, yet they were glad to commence afresh their lessons in the schoolroom, and to learn more about the great world on which we live.

Their father was pleased that what they had seen fitted them the better to receive some further lessons which he proposed to give them.

The boys had told Mr. Goodman of their voyage round the lake, and had shown him their chart. And on the next day, they were in the schoolroom at an early hour.

"Looking over my library yesterday," said the father, "I found a book called *A Voyage Round the World*, which led me to compare it with your voyage round the lake. You have heard, no doubt, that the world is *round*; not flat as it seems to us, but round and solid like a ball. It is therefore called a *sphere* or *globe*.

"I will try to make this clear," added Mr. Goodman, "if Fred will allow us the use of his large India-rubber air-ball for a few minutes."

Master Fred lost no time in fetching the ball, and placing it on the schoolroom table. It had not been on the table a minute before a blue-bottle fly settled on the ball, and moved about as though he were out on a journey of pleasure.

"See," said Mr. Goodman, "there is a fly creeping on the ball, and marching forward as straight as it can: if it keeps on the path it has chosen, it will come to the same place again."

"I wonder," said Master Fred, "if the fly knows that the ball is round?"

"Perhaps not," replied the father; "but whether it knows the shape of the ball, or not, we are quite sure that it cannot see all over the globe at once. It has wonderful eyes, but still it is not able to see over the curve, and to know what is on the other side of the ball; it must go round to find that out. It can see so little of the ball at once, that, if there were another fly a few inches from this one, they could not see one another, because neither of them could see far over a curve.

"Now, we are just like flies, only very much smaller in proportion to the size on the surface of the great globe called the earth. On the largest plain, or even on the wide ocean, we cannot see very far, because both land and water are bent round like the surface of the ball.

"Just as two flies, a few inches apart on the football, are unable to see each other, so we, who are larger, and placed on a much greater globe, cannot see people who are a few miles away, even on the sea, where there are no houses nor trees nor hills to stand in the way. It is not that our eyes are weak, but because they are not made to see round a corner, or over a curve.

"Just fancy a ship sailing in one direction only, — say always going eastward: it would at last come to the place from which it started. We know that it cannot sail exactly in a straight line all round the world, because some portions of land lie in the path; but when a ship does sail as straight as possible, and turns round any piece of land that lies in the way, and then gets into the straight line again, it comes to the place it started from, just as a pencil or a fly would in going round a ball. This is one proof that the earth is round like a ball or an orange."

Read to the class, also, from *Overhead*, by Annie Moore and Laura D. Nichols (published by D. Lothrop & Co., Boston; price $1.25), the following selections: —

"Planets *vs.* Chickens" . . . . . p. 39.
"Eclipses" . . . . . p. 67.
"The Seasons" . . . . . p. 77.
"The Moon" . . . . . p. 116.
"The Sun" . . . . . p. 188.

FIFTH AND SIXTH YEARS OF STUDY

Observations.

On the first day of school in September observe, with a vertical stick, the length of the shadow cast at noon. Compare this length with the length cast two weeks later, and report whether the shadow is longer or shorter.

By means of the same vertical stick in the yard, or in the schoolroom if the sun enters, trace the shadow on Sept. 21, at exactly twelve o'clock, true time. Draw a line across this shadow-line at right angles, and observe if it points to the part of the horizon where the sun rises and sets at this time of the year. Now mark the four cardinal points, obtained by the direction of the shadow and the line at right angles. Indicate the meridian of the place where the observation was made. Verify the same with the compass.

A vertical stick always points to the zenith. Suppose one is standing in the schoolyard, like AB, Fig. 66, long

enough to reach above B, the ground, some eight feet. At a convenient point above B fasten to the vertical, with a nail or screw, another stick three or four feet long, so that it will move in line with the direction of the shadow, as is indicated in the figure by C D. With the eye at C, move the sun-

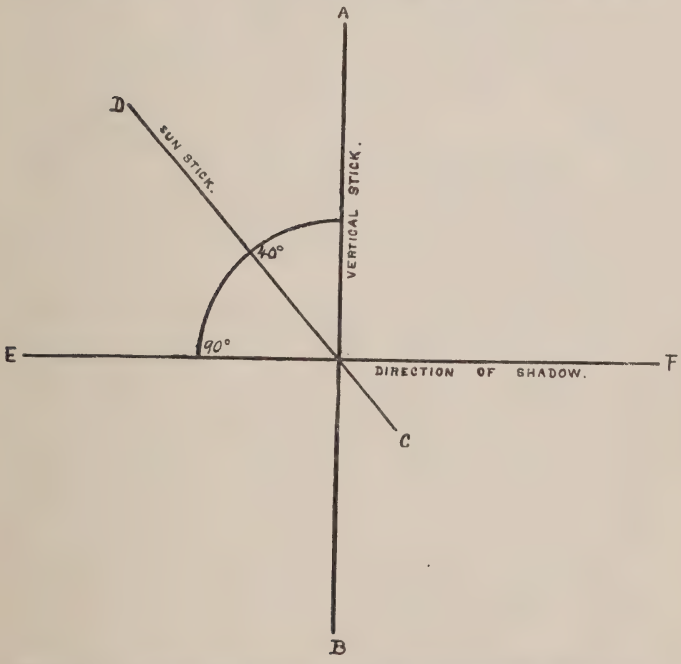


Fig. 66.— Diagram showing a Simple Apparatus for measuring the Latitude of a Place, Sept. 21.

stick till it points to the sun just at noon on Sept. 21. Secure the stick in this position. Then place against the two sticks a piece of paper, and trace the angle made by the two sticks. Draw a circle about the vertex of this angle, and measure it as shown in the figure.

Conclusions. — If there is no angle between the sticks, there will be no shadow cast by the vertical stick; and the schoolyard must be situated on the equator, it being Sept. 21 when the observation was made. If the shadow falls towards the south, then the observers must be south of the equator, perhaps in the Argentine Republic. If the shadow falls towards the north, then the school must be situated north of the equator, perhaps in the United States or in England.

If the angle is about twenty degrees between the two sticks, and the sun-stick falls from the vertical towards the south, then the school is twenty degrees north of the equator. If the angle is forty degrees, as in Fig. 66, then the school stands in 40° north latitude.

Observe the position of the North Star, the Great Dipper, and the group which looks like a chair opposite the Great Dipper, on the other side of the North Star, and called Cassiopeia. Then draw on paper the positions of the two groups. If the observation was made at eight P.M., about the middle of September, the position will be as given in Fig. 67.

Examine the position three hours later, and notice the change. The groups have moved from east to west, round just one-eighth of the circle.

This apparent motion from east to west is produced by the rotation of the earth from west to east.

In the daytime sit in a room facing east or west, and from which you have a good view of the sun. Draw the curtain to hide partly the too bright rays of the sun. Sit in a chair some distance from the window, so that you can see the sun directly through a pane of glass, but near a section

of the frame of the window. Keep the head perfectly still, and notice if the sun moves near the frame, or from it. A long paper tube, or piece of pipe two feet in length, will help to make the experiment more decided. A change

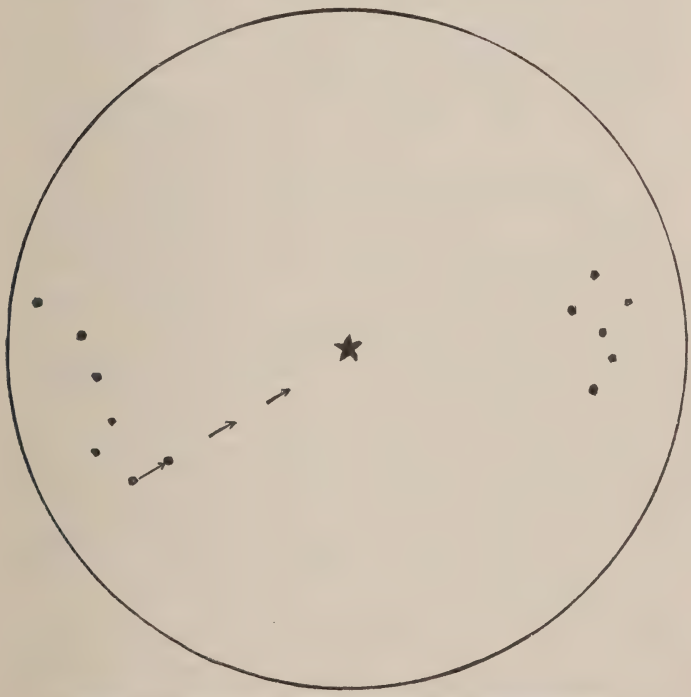


Fig. 67.—Position of Great Dipper and Cassiopeia, in September.

will be noticed in five to ten minutes. This is evidence of the earth's rotation. Repeat the experiment in the evening, with the moon or a star.

Watch a sunset, and try to think of the earth moving

towards the sun, and of the sun standing still, as it really does. After one or two trials, you will succeed in seeming to see the earth move up towards the sun.

The position of the sun at sunrise, noon, and sunset should be carefully noticed the second day of school, the 21st of September, in October, and finally the 21st of December, and results compared.

The *new moon* is usually seen early in the evening, in the western sky. Notice its exact position at eight o'clock P.M., by standing in a certain place, and marking the position by two points, — a tree, and a corner of a house; a distant church-spire, and a building; a hill, and some other point. The next night take the same position, and notice the change. The moon has moved one twenty-fourth of three hundred and sixty degrees towards the east.

Notice another change in its appearance. The bright part has increased in size.

Look in the almanac, and see when the moon rises or sets; see if the almanac is correct by your local time. Find out, by actual observation, how much later or earlier it rises or sets on the following day. Look at the moon through a pair of opera-glasses, *but never try this experiment on the sun.* [Why?]

Observe all the phases of the moon, and notice the relative position of the moon, the earth, and the sun. Draw on paper these positions. Learn which side is illumined, — the side turned *towards* the sun, or from it. At first quarter was the crescent vertical, or horizontal?

If the part turned towards the sun be the part illumined, would that be a proof that the moon is lighted by sunlight?

When the moon is in her first quarter, notice if you see a

faint illumination of that part of the hemisphere which is not included in the bright crescent. Does the sun then shine on the western portion of the earth? Could this light from the earth be reflected to the moon, and light it up as "earth light," and then be reflected to our eyes from the surface of the moon? Observe the exact position, by means of two fixed points, of the rising and setting of the moon, and see if the moon moves like the sun towards the south, and back again.

Observations in Reference to the Shape of the Earth.

Climb a hill, or building, or tall monument. The horizon increases in size, which is proof that the earth is spherical.

If the horizon is always circular, rather than oval, in shape, it is proof that the earth is spherical, rather than egg-shape.

Standing by the beach, notice the appearance of ships sailing far away, or coming towards the shore.

When there is a good opportunity, set up three stakes, six feet high, on a long, sandy beach; then sight from No. 1 to No. 3, and notice that the middle one seems to be higher than the other two, which is a rough proof that the beach is spherical instead of level, as it seems.

As one travels towards the equator, the North Star appears nearer and nearer the horizon, which would not happen if the earth were flat.

When the moon is next eclipsed (find out hour and day from almanac), notice the shape of the shadow of the earth cast on the face of the moon. If the shadow is circular again, as it always has been, it is proof that the earth is spherical.

Magellan, years ago, sailed round the earth; and lately

Mr. Stevens of Boston has travelled round the world on a bicycle.

If a person goes up in a balloon, he sees land and water, not only below him, but seemingly around him. The higher he goes, the higher rises the sky-line, till he seems hanging over a hollow bowl. The same appearance takes place when a person climbs a mountain rising from a plain. The sky-line, or circle of the horizon, becomes farther and farther away.

2. Study.

Review Form of Earth; Size of Earth.

Such terms as diameter, circumference, radius, meridian, equator, tropics, Arctic circles, poles, parallels, longitude, latitude, study in any good textbook on geography.[1]

Learn a few facts about the solar system, as

The sun is the centre. Round him revolve eight planets, divided into two groups; viz., (*a*) The nearer group, such as Mercury, Venus, Earth, and Mars; (*b*) Jupiter, Saturn, Uranus, and Neptune.

Draw on the board a circle two inches in diameter, and color it red, for the sun; then draw about it circles having a radius of three inches to represent the orbit of Mercury, four inches to represent that of Venus, five inches for the earth's orbit, seven for Mars, eighteen for Jupiter, thirty-two for Saturn, sixty-five for Uranus, ninety-six for Neptune. The last two you can only indicate by pinning a colored piece of paper, at the right distance from the sun, on the side of the room, over the blackboard.

Of the first four, the earth is the largest. Of the second four, Jupiter is the largest.

[1] King's, Dodge's, and Barnes's are especially recommended.

Jupiter is 1,390 times the size of the earth.

Mercury is thirty-five million miles from the sun, Venus sixty-six million miles, the earth ninety-two million miles, Mars one hundred and thirty-nine million miles, etc. Mars is noted for its red appearance, Jupiter for its belts, Saturn for its two rings.

The earth has one moon; but Jupiter has four, and Saturn has eight. By these moons, the people can tell the time of day.

The four inner planets rotate in about one day of twenty-four hours; the outer ones, in a day of ten hours. The sun rotates in a day of six hundred hours. The earth revolves about the sun in one year, Mercury in one-fourth of a year, Venus in about one-half of a year, Mars in two years, and Jupiter in twelve years.

On Mars, the ice and snow about the poles can be distinctly seen.

The diameter of the sun is eight hundred and sixty thousand miles. All the planets are equal in size to one seven-hundredth of the sun.

The stars are supposed to be suns, and centres of systems.

Römer found that a ray of light travels at the rate of one hundred and eighty-five thousand miles in a second of time, at which rate it will take four hours for light to go from the sun to Neptune, eight minutes to go from the sun to the earth, and three years to reach the nearest star. For light to reach some of the stars would require several centuries.

The Earth's Daily Motion, called Rotation.

This motion is best illustrated at first by a top's spinning. The earth *spins* round its axis once in twenty-four hours. The axis is the imaginary line around which it spins or turns; illustrated to the eye by a small globe. (Nothing is better for this than a twenty-five cent paper globe.) Different children should handle the globe, and point out the axis and poles. (See p. 400.)

It is important at this point for the teacher to ask the pupils to imagine the great earth rotating in space, as seen from the moon. A picture like the first one in Warren's *Common School Geography* will help the boys and girls wonderfully.

The teacher can help by asking such questions as these: —

1. If we were on the moon, what size would the earth seem to be?

2. If we could see it with a good telescope, how would the poles look?

3. What is a telescope?

4. How many pupils have one?

5. How many have seen one?

6. How many have a similar instrument?

7. Could we see the axis?

8. Could we tell where the axis is located?

9. Could we perceive a spinning motion?

10. Do we see such a motion when we look at the moon?

11. If not, why not?

12. Would the earth seem to move among the clouds as the moon does, when viewed from the earth?

13. Does the air on the earth move with the earth, or does the earth move in this belt of air?

14. Viewed from the moon, would the rate of rotation at the poles and at the equator be the same?

15. If different, where would it be the swifter? Why?

Direction of the Earth's Rotation.

The earth turns from *west* to *east*. This makes what two heavenly bodies appear to move from east to west?

Every morning this movement of the earth brings pupils and teacher into the sunlight, and makes this light come from the *east*. What would happen if the earth should forget for a week to rotate?

On account of the earth's rotation, in this way it happens, that, when the London boy goes home from school at five o'clock for his *supper*, the Boston boy is going home for his *dinner* at 12 M., and the San Francisco boy is going *to* school at nine o'clock in the morning, and the Honolulu boy is breaking his night's fast at 6 A.M., and the Chinese boy is dreaming of kites and fire-crackers.

At St. Petersburg, in sixty degrees north latitude, the speed of the rotation is about nine miles a minute; in Paris it is eleven and a half; at the equator it is eighteen miles a minute, or a thousand miles an hour, which equals the flight of a cannon ball.

The earth rotates once in twenty-four hours. The proof is found, (*a*) in the apparent rotation of the Great Dipper and other stars, every twenty-four hours (see p. 411); (*b*) if a stone is dropped from a high monument or cliff, it always falls east of a vertical line.

The *effects* of this rotation are to cause, —

1. An alternation of day and night.

2. A flattening at the poles.

3. The apparent motion of the sun, moon, and stars, in the opposite direction.

The Yearly Motion of the Earth, or its Revolution.

Illustration: Jackson's *Astronomical Geography*, Reynolds's *Astronomical Chart;* all astronomies and some geographies contain pictures of this yearly motion. *The best* is in *Barnes's Geography*, pp. 9 and 10. (See Fig. 68, p. 421.)

A globe held before the light streaming in through a solar camera gives the pupils the best idea of the illumination of the earth, and the changes of the seasons. A common lamp and the globe, used on a dark afternoon, will answer very well.

If three pasteboard maps or writing-charts be spread out upon the teacher's desk, and a large ball be placed in the centre, or, better, to avoid confusion, if the teacher place a circular piece of paper of a bright color on the centre of the chart, to represent the sun, the pupils will have a pretty good representation of the sun, the plane of the earth's orbit, and the orbit itself. A small globe carried round the *edge* of these charts, not above the edge, the north pole always pointing towards the north, will help the children to imagine how the world travels round the sun each year. Place something high up on the north side of the room to represent the North Star.

The globe placed on the side of the representative sun nearest the North Star, with the north pole pointing towards the supposed North Star, will be in such a position that the

children can readily tell the season of the year north of the equator and south of the equator, if they remember about perpendicular and oblique rays of light. Place the globe on the opposite side of the sun, the axis still inclining as before, twenty-three and a half degrees, and ask the pupils to tell how the rays of light, supposed to be shining from the supposed sun, will strike the portion of the globe near the north pole; near the United States. They will answer correctly.

The next day the children can be led to see why the tropics are placed where they are, and also in reference to the Arctic circles.

Now call their attention to the reasons for the zones, their characteristics, and the fact that the zones are belts.

With this same simple apparatus, the teacher can lead the boys and girls to imagine when the sun will be in the zenith at noon to a person standing on the equator; on the tropic of Cancer; on the tropic of Capricorn.

Change of Seasons.

The principal effect of the revolution of the earth, together with the inclination and unvarying direction of the earth's axis, is the change of seasons.

Another effect is the change in the length of day and night.

A third effect is the apparent yearly motion of the sun through the different signs of the zodiac.

Learn the significance of the dates, Sept. 21, Dec. 21, March 21, and June 21.

Sept. 21 the sun will be directly over the equator, the terrestrial hemisphere from pole to pole will correspond with the hemisphere of illumination, and the line of illumination will extend from pole to pole. Hence every parallel will be half lighted at once.

Consequently day and night will be the same length throughout the world. The sun will rise in the true east, and set in the true west.

March 21 the sun is over the equator, and the days and nights will be equal.

Dec. 21 the sun will be directly over the tropic of Capricorn. This tropic will be more than half lighted, and the day will be longer than the night to any living on that tropic. The difference on the equator, Dec. 21, between day and night, will not be very great. But the tropic of Cancer will have a smaller part of the circle lighted than is not lighted, hence then the day will not be as long as the night. On the fortieth parallel north latitude, the difference will be very great. Dec. 21 the day is ten hours and five minutes, and the night is thirteen hours and fifty-five minutes.

Dec. 21 the sun, at noon, on the fortieth parallel north latitude, is not very high in the heavens; and we speak of the sun being very far to the south. The arc cut on the sky this day is small, and consequently the sun rises and sets south of the true east and west.

Dec. 21, on the Arctic Circle, the sun will only appear at noon in the south, as if about to rise. Within the Arctic Circle no sun will be seen at this time. Darkness reigns supreme.

The Arctic night in Smith Sound lasts a third of the year.

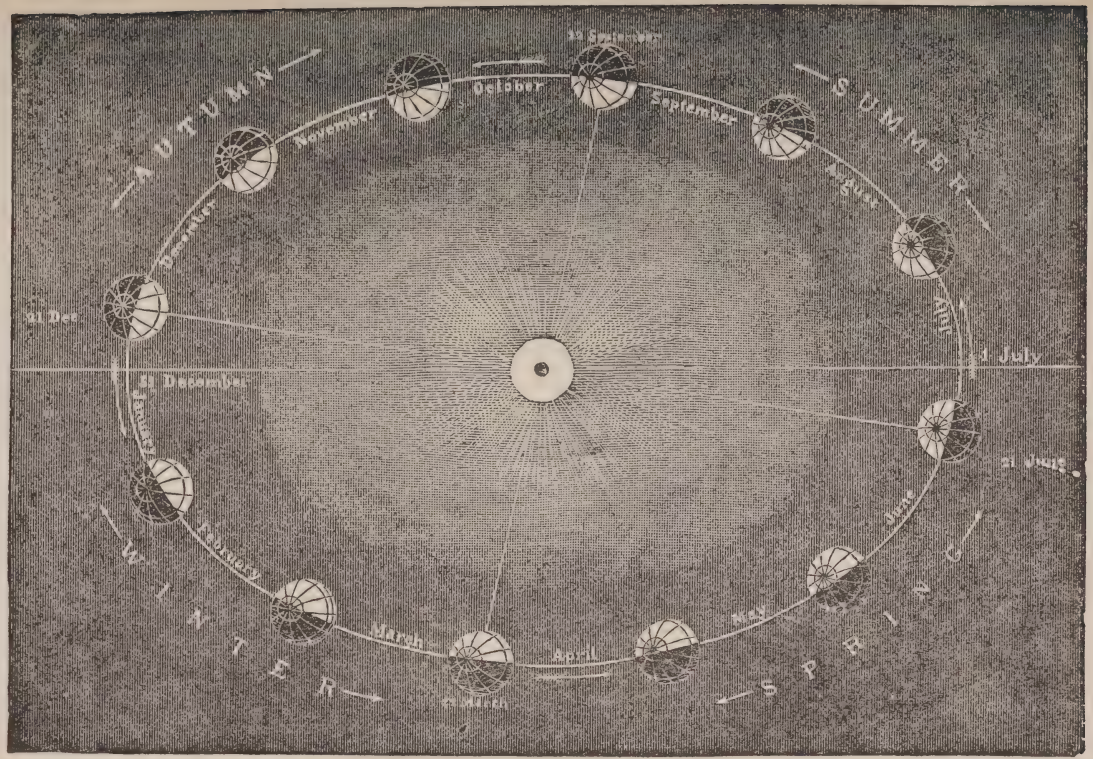


Fig. 68.— Yearly Motion of the Earth, showing Change of Seasons.
(From Barnes's Geography, by permission.)

Dr. Hayes has given several sublime descriptions of the darkness.

As the south pole is turned towards the sun at this time, this part of the earth receives an unusually large amount of light and heat. The sun is now perpendicular over the tropic of Capricorn, and illumines a hemisphere extending ninety degrees south and ninety degrees north of this circle. Ninety degrees south will carry the light as far as the farther side of the Antarctic Circle. The day on this circle will be just twenty-four hours long. Within the circle the day will be more than twenty-four hours long; and it will grow longer and longer till the south pole is reached, when it will be six months long. At this season of the year the days will be longer than the nights everywhere south of the equator. Consequently the nights must be longer than the days *north* of the equator.

The teacher should ask such questions as the following: —

1. Dec. 21, what is the length of day at the Arctic Circle? Of the night?

2. What is, then, the length of day at the equator?

3. Dec. 30, will the day on the Antarctic Circle be increased or diminished in length?

4. Is the length of day changed by changing locality on the same date?

5. Is it changed by changing date at the same locality?

6. Have many persons experienced these changes within the Antarctic Circle? Why not?

7. What is the length of day on our parallel?

June 21 the sun is directly over the tropic of Cancer. Persons living on that tropic will see the sun at mid-day directly in the zenith. The tropic of Cancer will be more

than half lighted, and the day will be longer than the night on that circle.

On that day the fortieth north parallel will be more than half illumined, and consequently the day will be much longer than the night. The sun will rise at 4.23, and set at 7.40, making a day of fifteen hours and seventeen minutes, being the longest in the year.

At this time of the year the Arctic Circle will have twenty-four hours of sunlight, as the sun will not set at all. The northern parts of Sweden, Norway, and Russia have the "midnight sun" from the latter part of May till August.

In Hammerfest the sun shines without interruption from May 16 till July 27. It does not shine so brightly at twelve midnight as at twelve noon. [Read Du Chaillu's *Land of the Midnight Sun*, pp. 48, 57, 61, 63, 70, and 107.]

The appearance of the sun on the 21st of June, to a person standing on the Arctic Circle, is thus described by a Boston teacher: —

"At midnight the sun will be at our northern horizon, and will move toward the east, rising above the horizon as it moves, until it reaches the east, when it will be twenty-three and a half degrees above the horizon. It will continue on toward the south, rising above the horizon as it moves, until it reaches its superior culmination, forty-seven degrees above our southern horizon, at noon. It will then move on toward the west, gradually sinking toward the horizon as it moves, until it reaches the west, twenty-three and a half degrees above our horizon. It will then move on, gradually sinking toward the horizon, until it reaches the horizon at its northern point just twenty-four hours after leaving it."

The Sun.

All power seems to come directly or indirectly from the sun. In a physical sense he is our creator, and he keeps us alive from day to day. The sun caused the vegetation to grow ages ago. This vegetation subsequently made our coal; and the coal makes the steam or electricity which makes our engines move. On a hot day enough heat is absorbed, in a little island, to drive, if it could be realized, all the steam-engines in the world. There is a possibility of turning this heat of the sun into direct power. At the last Paris exposition an extraordinary machine was shown, looking like an inverted umbrella pointing towards the sun, invented by M. Mouchat, which concentrated the rays of the sun on a boiler in the focus, and drove a steam-engine with it, which in turn drove a printing-press. Mr. Ericsson has invented, and is using now in New York, a working solar engine of still greater power and utility. (See Langley's *New Astronomy*, pp. 108–112.)

The Moon.

Phases. — The teacher should draw on the board a small circle to represent the earth; then draw about it a large circle to represent the orbit of the moon; then draw a small circle at the four quarters of the large circle, to represent the moon in these four parts of her orbit. Represent the light as coming from the right. The teacher then should ask the children to represent the hemisphere of the earth and the moon in these four positions, which is lighted by the sun's rays. After which they should be asked by the teacher to show in drawing how the moon would appear to an observer on the earth in each quarter.

If the children are thus led from their previous observations of the moon's phases, and a little aid from the teacher, to complete this common diagram of the moon's phases, they will be likely to understand very clearly this monthly occurrence.

Motion North and South. — The path of the full moon in the sky is far north, nearer the zenith, in winter, and far south, nearer the horizon, in summer. Hence the moon shines a long time in winter when needed, and a short time in summer. Thus the moon's path in the sky is exactly the reverse of the sun.

Time of Rising. — As the moon revolves around the earth in one month of twenty-seven and a third days, she moves thirteen degrees east while the earth rotates once ; thus she gets thirteen degrees ahead of the earth's horizon each day, or twenty-four hours. The horizon of the earth moves at the rate of one degree in four minutes ; to catch up with the moon's thirteen degrees, this will take about fifty minutes, so the moon rises fifty minutes later each night. But in September, in latitude 40°, this difference is decreased to twenty-five minutes. As the farmers observe and enjoy this more regular time of the moon's appearance, they have given a name to the September moon, and they call it the " Harvest Moon."

Same Side. — The children can be led to observe the appearance of different full moons, and to notice the similar peculiar dark markings. This sameness is a proof that the same side is constantly turned towards the earth. Thus the moon differs from the planets or the sun.

The Lifeless Moon.

The moon is dead. It has not life enough left to ooze forth the tiniest mud volcano, or spurt out the feeblest geyser. No throb ever reaches its surface, and not the faintest rumble is ever echoed from its jagged mountain-sides. No earthquake wave can ever sweep its island shores, for earthquakes there are things of the almost infinite past; and the last drop of water quitted the surface of the planet æons ago. Its very atmosphere has deserted it; and if, indeed, there were a "man in the moon," he could never hear the sound of his own voice. But if by some means this mythical man could have witnessed the "Ischia disaster," and the "Java catastrophe," how he would have longed that any such manifestations of life were possible on his lifeless planet.

There is evidence enough to show that at one period its volcanic activity must have been of the most stupendous kind, far exceeding any thing ever witnessed on its mother-earth. But that has gone with its water and its atmosphere, and taken with it all possibility of life.

Tides.

Ask the children to tell you what they have observed about the *tides*, or the periodical rising of the waters of the ocean.

The ancients noticed that high tide came about one hour later every day, and that the moon rose about one hour later each day; and they suspected some connection of cause and effect on account of this coincidence.

Sir Isaac Newton first explained how the unequal attraction of the moon on the different parts of the earth causes the water nearest the moon to rise towards it, and the water farthest from the moon to fall away. As the earth rotates, different parts are in turn brought nearest the moon, and the water is heaped up at those successive places, and also just opposite: hence every place has, each twenty-four hours, two high tides, and also two low tides.

Let the teacher illustrate this on the board, by drawing first a circle to represent the earth, and supposing this to be covered equally and entirely with water. Then below draw

another circle, same size, to represent the earth again. At right draw, three feet away, a smaller circle to represent the moon. Then draw — all before the class — the water, somewhat heaped, nearest moon, and on opposite side.

Other diagrams can be added to show the help of the sun when in same line, hence spring tides; when sun and moon are at right angles with the earth, the tide will be unusually low, or *neap* tide. The difference between spring and neap tides in New-York harbor is two feet. The average tide in New York is four and a half feet; in Boston, nine to ten feet; in mid-ocean, three and a half feet. In the Bay of Fundy, owing to its tunnel shape, it rises to seventy feet. In Venice, the tide rises only eighteen inches. On Lake Superior, only one inch.

Representation of the Solar System.

Signor Perini of London has thought out an ingenious method of showing the arrangement and movements of the earth and planets. The upper part of an ordinary room is changed to a blue dome sprinkled with stars, the constellations of the zodiac being arranged around the base of the dome. Suspended from the centre of the dome by a narrow tube is a glass globe, lighted with gas, to represent the sun. The planets with their moons, Saturn with its rings, are also suspended at appropriate distances, each inclined to the plane of its orbit, and each the proper size. By means of clockwork, the planets move noiselessly around the sun in their proper elliptical orbits. By ingenious watchwork arrangement inside, the earth turns upon its axis, and the moon revolves around it.

Another excellent means of representing the same to the eye, is by the COSMOSPHERE invented by Professor F. H. Bailey, Boston. This instrument shows the heavens as seen from any part of the earth, and the movements of sun, moon, and stars.

3. Reading and Talking.

[The teacher will find plenty of material for outside instruction and illustration in the following books.]

Tides. Sharpless and Philips's *Astronomy*, p. 122.

How the Moon causes Eclipses. Science Primers: Lockyer's *Astronomy*, p. 45.

Star Depths. Proctor's *Our Place among Infinities*, p. 182.

Saturn. Proctor's *Our Place among Infinities*, p. 128.

A Dream. Proctor's *Expanse of Heaven*, p. 1.

The Sun. Proctor's *Expanse of Heaven*, p. 11.

The Queen of Night. Proctor's *Expanse of Heaven*, p. 20.

Jupiter's Families of Moons. Proctor's *Expanse of Heaven*, p. 85.

The Flight of Light. Proctor's *Expanse of Heaven*, p. 202.

Colored Suns. Proctor's *Expanse of Heaven*, p. 221.

The First Predicted Eclipse, by O. M. Mitchell, p. 109, in Five-Minute Recitations.

Half-Hours with the Stars, by Richard A. Proctor.

Land of the Midnight Sun, by Du Chaillu. Vol. i. pp. 48, 57, 61, 63, 70, and 107.

The Sun's Energy. *The New Astronomy*, by Professor S. P. Langley, chaps. iii. and iv.

The Moon's Surface. Proctor's *Moon*, pp. 185–190. Published by Appleton & Co.

NOTE. — The many students of astronomical geography, living in or near Boston, have at their disposal, for a dime each, a good telescope, always found on the Common. This instrument has a nine-inch aperture, and shows with good effect, each in its appropriate season, the sun, moon, Jupiter, Saturn, Venus, double stars, etc. Many of the classes in high schools, and in private schools, regularly avail themselves of the use of this instrument.

Suggestive Questions.

1. What is the present appearance of the moon?
2. When does it rise to-night?
3. When and where do you generally first see the new moon?
4. Is twilight as long here as in Quebec?
5. At what time of the year does the sun rise towards the south? towards the north?
6. How can a person find the true north, if he has his watch and the sun shines?
7. What line on the map is indicated by the noon-day shadow?
8. Of what practical use are parallels and meridians?

CHAPTER XIX

SOURCES OF INFORMATION AND ILLUSTRATION

He picked something out of every thing he read. — *Pliny.*

What is twice read, is commonly better remembered than what is transcribed. — *Johnson.*

SOURCES FOR CONSULTATION

PRIVATE and Public libraries, latest books, consular reports, magazines, and newspapers.

CHAPTER XIX

SOURCES OF INFORMATION AND ILLUSTRATION

HARPER'S MAGAZINE — BOUND VOLUMES OF THE SAME — OTHER SOURCES — SPECIAL SOURCES — REPORTS OF GEOGRAPHICAL SOCIETIES — IMPORTANT GEOGRAPHICAL SUBJECTS IN IMPORTANT BOOKS — POEMS OF PLACES — SIBERIA — MONT BLANC — IMPORTANT POEMS SELECTED — PLACE-NAMES

THESE sources, in general, are found abundantly in books of travel, magazines, newspapers, geographical readers, books of reference, such as gazetteers, encyclopædias, etc. A full list of the best of these is given in the next chapter.

If the teacher desires to find information upon some particular subject, such as would interest a class in a grammar school, giving more details than books of reference, we refer him to *Harper's Monthly Magazine*, *Scribner's*, and *Century* among the older magazines, and their published indexes.

To show what a wealth of geographical information is here at hand, let us turn to some topic likely to be called for by a wide-awake teacher, as, for instance, India. In Harper's, there will be found on this subject thirty fully illustrated articles, by such well-known writers as J. H. Brown, James Parton, W. S. Stuart, Col. Thomas W. Knox, A. H. Guernsey, C. T. Brooks, and others. The special subjects treated are Benares, Bombay, Calcutta, Cashmere Valley, Himalayas, Land of the White Elephant, Madras, Taj Mahal, Tiger Hunting, etc.

Harper's Magazine for May, 1888,

contains, "London as a Literary Centre," "A Winter in Algiers," "Studies of the Great West," "Chicago," "Russian Convicts in the Salt-mines of Siberia," "The City of Denver." All these articles are beautifully illustrated.

Below are given the titles of interesting articles in the late bound numbers of *Harper's Magazine:* —

(The numbers here, and elsewhere in this chapter, refer to pages in the respective volumes.)

Vol. LXVI., December, 1882–*May*, 1883. — Arizona, 489; The Brooklyn Bridge, 925; The Columbia River, 3; Southern California, 45; English Farmers, 651; Havre, 28; Holland, 165, 387, 520; San Francisco, 813; The Welsh Coast, 327.

Vol. LXVII., June to November, 1883. — Alleghanies, 327; Canada, 375; Spain, 32, etc.; The Catskills, 521; Cincinnati, 245; London, 828; Hiawatha, 68.

Vol. LXVIII., December, 1883–*May*, 1884. — Bank of England, 885; Canada, 392; Frazer to the Columbia, 706, 869; Florida, 598; West Highlands, 63; Mentone, 189, 367; St. Louis, 497; Upper Thames, 335.

Vol. LXIX., June to November, 1884. — Boston Harbor, 352; Columbia College, 813; New-York Custom House, 38; Holland, 327, 523, etc.; Lake Superior, 103; The Nile, 165; Queenstown, 489; Salt Lake City, 388; Sheffield, 67; Sierra Madra, 747; St. Lawrence, 197; Columbia River, 500.

Vol. LXX., December, 1884,–*May*, 1885. — Cape-Ann Quarries, 549; Florida, 216; A Pair of Shoes, 273; London, 857; Pullman, 452; Rio Grande, 687; Washington, 520; Hennequen Plant, 372.

Vol. LXXI., June to November, 1885. — Bogota, 47; Buffalo, 193; Guatemala, 886; Hartford, 715; A Silk Dress, 240, Labrador, 489, etc.; India Architecture, 165; Ottawa, 327; English and American Railways, 375.

Vol. CXII., December, 1905–*May*, 1906. — The Integrity of American Character, 67; Slave Trade of To-day, 114; A Steel Rail,

585; English Washington Country, 651; The Lower Colorado, 786; Unknown Labrador, 813; Mexico, 879.

Vol. CXIII., June to November, 1906. — Through the African Wilderness, 27; Honey Ants in Colorado, 126; With a Caravan, 184; Carpenter Ants, 293; Newport, 343; Southampton to London, 892; Floral Perfumes, 934.

Other Magazines.

Scribner's, Vol. XXXIX., January to June, 1906. — The Wapiti, 15; The Moose, 157; Villas of the Venetians, 205; The New China, 240; Thirteen Hundred Miles in an Automobile in Europe, 257; Pan-American Railway, 391; Caribou, 426; Normandy, 530; Railways of Africa, 553; Tribes of the Northwest Indians, 657; English Bird Life, 705.

Vol. XL., July to December, 1906. — Antelope, 33; Railways in Canada, 73; Glasgow, 97; White-tailed Deer, 321; In Spain, 441; In Bohemia, 535; London, 589.

The World's Work, Vol. IX., November, 1904–*April*, 1905. — In Ethiopia, 5795; Fresno, California, 5827; The Wireless, 5843; Into Tibet, 5907; English Railroads, 5933; Industrial Life in France, 5969; Venezuela, 5983; In Russia, 6019; Panama Canal, 6047; The Re-making of Boston, 6055.

Vol. X., April to November, 1905. — Foresting the Prairies, 6255; Japan, 6267; A New England Town, 6275; The Public Schools, 6365; The Ideal Home, 6399; The Northwest, 6474; Alaska, 6528; Manila, 6629; The Automobile Industry, 6715.

Vol. XI., November, 1905–*April*, 1906. — The Leaders of Japan, 7040; The Southwest, 7073; Porto Rico, 7082; Haiti, 7151; Kansas City, 7191; An Oklahoma Ranch, 7219.

Vol. XII., May to October, 1906. — China, 7487; Stockyards, 7491; Corn, 7515; Oklahoma, 7603; Zambesi, 7637; Japanese Women, 7625; Idaho, 7648.

For more information from bound volumes of this and other magazines, we refer the reader to Poole's *Index*.

Other sources of recent knowledge will be found in the following: *Harper's Weekly, World's Work, Petermann's*

Mitteilungen (German), *Scribner's*, *Popular Science*, *National Geographic Magazine*, *Outing*, and the best daily newspapers.

Recent geographical knowledge is furnished week by week, for the schoolroom, by *Our Times*, published by A. S. Barnes & Co., Elizabeth, N. J.; and the *School Herald*, published by W. I. Chase, Chicago. *Popular Educator*, Boston, also contains much geographical information; so does *The Fountain*, by W. H. Shelley, York, Penn.

Special Sources for Special Information.

For Arctic regions, consult Greely's *Three Years of Arctic Service*, Nourse's *American Explorations*, Hayes's *Open Polar Sea*.

For Greenland, consult Professor Rink's *Greenland*.

The best physical maps are found in Guyot's and King's geographies.

The best political maps are in Warren's, Barnes's, and Harper's, Frye's, Redway's, and King's.

The best treatment of South America is in Appletons'.

The best representations of continental relief will be found in King's and Tarr's.

McNally's Geography contains invaluable foot-notes.

Johnston's *Descriptive Geography* and Richardson's *Manual of Geography* contain needed information, arranged by topics.

The best condensed and well-illustrated treatment of astronomical geography is given in Barnes's *Complete Geography*, King's and Dodge's *Geographies*.

For a fuller account, see Jackson's *Astronomical Geography*, published by Heath & Co. Johonnot's *Geographical*

Reader is well adapted for the graduating class, and full of important general information.

Appleton's Encyclopædia and Lippincott's Gazetteer supply full and accurate information to date of publication.

Physical Geographies by Tarr, Davis, Gilbert, Brigham, Dryer, and Guyot are all excellent books.

Our World No. 2 has many good descriptions of the people.

Knox's *Boy Travellers* (12 vols.) is a good juvenile book of travel.

Seven Little Sisters, by Miss Andrews, is one of the most popular supplementary readers for the lowest classes.

The Consular Reports issued by the United States Government, Dept. of Commerce, contain the most recent information in reference to foreign countries.

Harrington's *Weather* contains the most recent knowledge, founded on signal-station reports.

The best geographical encyclopædias are Stanford's *Compendium* (6 vols.) and Reclus's *Earth and its Inhabitants* (15 vols.). Superbly illustrated.

The best book on teaching moulding and relief is Frye's *Geography and Sand Modelling*.

The best book on commerce is Chisholm's *Handbook of Commercial Geography*. 1905.

In addition to the above we mention Adams's, Macfarlane's, Redway's, Tilden's, Trotter's and Zehden's *Commercial Geographies*.

The American Almanac by Spofford, Congressional librarian, published every March, is invaluable for reliable statistics.

The Statesman's Year Book, published annually by

Macmillan, contains an immense amount of reliable information.

The Annual Report on the Commerce and Navigation of the United States, by the Treasury Department, Washington, contains statistics of great value, and much interesting information.

One of the most helpful books on methods of teaching geography is Miss Crocker's.

Around the World by Prime, *Due West* by Ballou, *Over the Ocean* by Guild, contain the exact information each teacher needs to use in the schoolroom.

Reports of the Geographical Societies.

There are nearly sixty of these societies in the world, including one in Algeria and one in Japan. The oldest is the French Geographical Society of Paris, established in 1821; the largest and the most influential is the Royal Geographical Society of London. The American Geographical Society is fifth in size. These societies publish a hundred and twenty-six different periodicals, usually called reports. The reports of the American, Royal, French, German, and Russian are full of valuable information, as may be judged by the epitomes given below.

To show the value and richness of these reports, we give a few of the subjects treated in recent numbers: —

Reports of the Royal Geographical Society, London, for 1886. — From Cape Town to Lake Nyassa, 65; Notes on Mount Everest, 88; Arctic Explorations, 156; Korea, 289; Physical Geography of Brazil, 353; In Kalahari, 437; Burma, 481; Congo Free State, 609; River Systems of South India, 681. Many valuable maps.

American Geographical Society, Vols. XIV. and XV., for 1882–83. Part 1: Siberia, by George Kennan, 1; The Gulf Stream, by Com-

modore J. R. Bartlett, 69; Lake Mœris, by F. C. Whitehouse, 85; Explorations of the River Bene, South America, by Dr. E. R. Heath, 117; The New Germany, by President White, 205; Travels in Sweden, etc., by Du Chaillu, 285. Part 2: Dutch South Africa, by Col. Aylword, 1; The Philippine Islands, by S. Kneeland, 73; Currents of the Pacific Ocean, by Th. Antisell, 101; The Valley of the Loire, 215; Southern Russia, George Kennan, 289; The Political Geography of Egypt, by C. P. Stone, 361.

National Geographic Magazine, Vol. XVI., 1905. — Immigration, 1; Shasa, 27; Farmers of the United States, 39; Chart of the World on Mercator's Projection, 54; Russia, 55; The Canals of China, 68; The Bay of Fundy, 71; Helping the Farmers, 82; The Japanese People, 94; Gold Fields of Alaska, 104; The German People, 111; Gardens of the West, 117; The Philipinos, 139–198; Japan, 201; Guam, 229; The American Desert, 242; The Weather and Storms, 255; Map of Manchuria, 30; The Russian Government, 309; Victoria Falls, 349; The Philippines and Map, 361; Forestry, 375; The Central Plains, 389; Transportation in China, etc., 400; The Panama Canal and Map, 445–475; The Parsees of India, 529; Panama Canal, 558.

SOURCES OF INFORMATION FOUND IN BOOKS

This is rather a suggestive, than an exhaustive, list. The names of many valuable books are omitted for lack of space. If each teacher will spend a few moments in writing and indexing such a list as fast as he reads, he will, in a short time, have a valuable catalogue of subjects.

North America.

THE HOMES OF AMERICA. *Mrs. Martha J. Lamb.* 1879. — Roger Morris House, 16; Van Rensselaer, 32; Sir William Pepperell, 41; Quincy Mansion, 48; John Howard Payne, 54; Mount Vernon, 65; Gen. Charles Lee, 71; Montgomery Place, 102; Old Morrisania, 110; William H. Morris, 121; Cedarmere (Bryant), 131; Longfellow, 134; Elmwood (Lowell), 139; Emerson, 142; Sunnyside (Irving), 153; Idlewild (Willis), 166; Mrs. Samuel Colt, 178; H. Cabot Lodge

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The Great South. *Ed. King.* 1875. — New Orleans, 28–67; Levee System, 67; Texas, 99; St. Louis and Missouri, 215–257; Life on Cotton Plantation, 297; Florida and St. Augustine, 383–422; Virginia, 621; Mammoth Cave, 699.

Santo Domingo. *S. Hazard.* — Extent, Peculiarities, etc., 1; History, 18–132; Toussaint, 133; Samana, 195; St. Domingo City, 212; Journey Overland, 274–318; Hayti, 402–441.

Newfoundland. *Joseph Hatton.* 1883. — Part 1, History; 2, Physical Geography; 3, The Fisheries; 4, Agricultural Resources; 5, Mineral Resources; 6, Population, etc. St. Johns, 147; The Interior, 168; Climate, 188; Manners and Customs, 222; Caribou, etc., 230; The Cod, 280; Seal, 295; Salmon, 317; Other Fisheries, 323; Coal Areas, 414; Population, 428; Education, 457.

The West, from the Census of 1880. *Robert P. Porter.* 1882. — The Prairie States, 9; The Territories, 79; The Pacific States, 94; Colored diagrams showing grain and forest products, metals, etc., of this part of the United States compared with the world, 13–68.

History of the Northern Pacific Railroad. *E. V. Smalley.* 1883. (Published by Putnam. Very well illustrated with pictures from photos.) — Part 1, Historical: Search for the Source of the Mississippi, Expeditions of Long and Pike, 5; Capt. Gray and Ship Columbia, Discovery of Columbia River, 12; Lewis and Clarke Expedition, 20; Fur Traders, etc., 33; Marcus Whitman's Heroic Ride, His Death, 46. Part 2, The Northern Pacific Country: Lake Parts, 309; Northern Minnesota, 321; North Dakota, 330; Montana, 341; Idaho and Washington Territory, 351; Oregon, 361; Portland and Puget Sounds, 370. Part 3, Detailed Account of the History Beginning, and Completion of the Northern Pacific Railroad, 51; Henry Villard, 245.

Our Wild Indians. *Col. R. I. Dodge.* 1882. — Indian Habits in Different Tribes: Traits and Peculiarities, 42–67; Treaty System, 87; Religion of the Indian, 96; The Medicine Chief, 114; Self-Torture, 146; Funereal Ways, 153–167; Indian's Heaven, 175; Childhood and Youth, 181; Love-Making, 190; Women, 200; Skill, 250; Clothing,

297; Dances, 356; Weapons, 415; Fighting, 435–540; Adventures and Experience and Anecdotes.

NATURAL RESOURCES OF THE UNITED STATES. *J. H. Patton.* 1888. (D. Appleton & Co.). — Coal, 10–48; Petroleum, 108; Iron, 120; Gold, 160; Silver, 176; Copper, 193; Other Metals, 211; Building-Stones, 276; Salt, 308; Medicinal Springs, 325; Rainfall and Climate, 348; The Mississippi Valley, 378; Wheat-Belt, 395; Timber, 413; Fruits, 439; Ocean Resources: Fish, 478.

DANISH GREENLAND. *Dr. Rink.* — Good Maps, Some Good Pictures, General Physical Features, 39, 64; Climate, 56; Resources, 75; Seals and Whales, Fish, 111, 131; Inhabitants, 176; Trade, 280; Glaciers, 357.

THE OPEN POLAR SEA. *Dr. Hayes.* — Sunrise, Glacier, 127; Aurora Borealis, chap. xvi.; Arctic Night, 222; Midwinter, 192.

THREE YEARS OF ARCTIC SERVICE. *A. W. Greely.* — Vol. I.: International Circumpolar Stations, 19; Greenland, 25; Fort Conger, 87, 180; Sunlight to Darkness, 115; Scientific Observations, 124; Our First Dark Days (on the glacier), 284; The Farthest North, 347. *Photographs:* Eskimo in Kayak, 1; Musk-ox, 104; Godthoab, 19; Greenland Coast near Godhave, 25; Arctic Belles, 32; Upernavik, 34, 56; Icebergs, 294; Musk-calves, 363; Photograph of the Expedition North, 260; Luna Halo, 187. Vol. II: Crossing Grinnell Land, 27; Great Glacier, 40; Polar Ice, 43; Retreat, 61; Rescue of the Seven, 312; Foxes, Musk-ox, etc., 361.

NORTHWARD OVER THE "GREAT ICE." *R. E. Peary.* (1898, 2 vols. Illustrated.) — Vol. I.: Upernavik, 61; Home, 77; Polar Bear, 195; The Great Night, 159; Marching North, 281; Northernmost Greenland, 329. Vol. II.: Melville Bay, 163; The Walrus Hunt, 247; Hunting, 305; The People, 395.

JOURNEYS IN ALASKA. *E. R. Scidmore, Illinois.*—Fort Wrangell and the Stikine, 46; Juneau, 81; Muir Glacier, 131; Sitka, 174–214; Education in Alaska, 229; Sealskins, 300; Totem Poles, 53; Pictures of the Muir Glacier, 137, 144, 147.

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Our West Indian Neighbors. *Ober.* (Illustrated.) — The Bahamas, 2; Havana, 53; Tropical Vegetation, 88; Colonists in Cuba, 108; The Cuban, 90; Jamaica, 137; The Haitians, 150; Porto Rico, 225; Three Little Dutch Islands, 267; Several Caribbean Islands, 285; An Island of Wonders, 329; Martinique and Pelee, 354.

The Heart of the Alleghanies; or, North-Western Carolina. *W. G. Zeigler* and *B. S. Grosscup.* — Native Mountaineers, 15; Natural Resources, 167.

The Atlantic Islands (*Illustrated*). *Benjamin.* — Bahamas, 13; Bermudas, 161; Newfoundland, 146; Prince Edward Island, 188; Cape Breton Island, 222; Isle of Wight, 234; Isles of Shoals, 205; Azores, 33; Madeira, 94; Teneriffe, 121; Channel Islands, 57.

Fifth Avenue to Alaska. *Ed. Pierrepont.* — Mormon City and the Mormons, 17; Yosemite Valley, 58; Big Trees, 69; San Francisco, 43, 90, 97; Columbia River, 110, 224; Victoria to Alaska, 141; Alaska, 149, 217; Yellowstone Park, 237, 249; Livingstone to St. Paul, 312.

Travels in Mexico. *F. A. Ober,* 1884. — General Description of Mexico, 194; Temperate Zone, 197; Ascent from Vera Cruz, 201; City of Mexico, 221; Mexican People, 281, etc.; Chapultepec, 355; Profile of the Country, 195; Cold Zone, 198; Coffee, 205; Funeral by Horse-car for Three Dollars, 266; Maguey or Century Plant, 342; Popocatapetl, 373.

Canada in the Twentieth Century. *A. G. Bradley.* (1904, Illustrated.) — Newfoundland Fisheries, 9; Quebec, 20; Down the St. Lawrence, 61; Pulp Mills, 87; Montreal, 97; Scotsmen in Canada, 103; Ontario, 121; Ottawa, 130; Home Life, 152; Amusements, 160; Ontario Farmers, 169; Emigrants, 189; Toronto, 209; The Lake Route, 234; Winnipeg, 248; Canadian Prairies, 268, 297; Manitoba, 278, 290; American Settlers, 306; Calgary, 321; Horse Raising, 329; Ranching, 331; Canadian Rockies, 343; Salmon, 377; Vancouver, 389.

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BRAZIL, THE AMAZON, AND THE COAST. *H. H. Smith.* — Para, 34; The River-plain, 78; American Farmers on the Amazon, 135; The Forest, 176; Zoölogical Gleanings, 205; The North Shore, 257; The Tapajos, 226; An Indian Village, 370; Social Life at Rio, 451; The Story of Coffee, 511; The Tributaries of the Amazon, 588; Bahia, 448.

WILD SCENES IN SOUTH-AMERICAN LIFE, IN THE LLANOS OF VENEZUELA. *Don R. Paez.* — The Llanos, 26; Wild Horses, 74; Across the Pampas, 85; Birds of Ill-omen, 163; Plants and Snakes, 202; The Armadillo, 245; The Great Ant-eater, 257; Young Crocodile, 269; Maracaibo, 388.

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IMPRESSIONS OF SOUTH AFRICA. *James Bryce.* 1900. — The Coast Ship, 2; Mountain Ranges, 4; Climate, 6; Health, 10; Wild Animals,

16; Vegetation, 23; Cape Colony, 32; Natal, 35 and 291; Scenery, 50; The Natives, 60; The Kafirs, 82; Traveling, 183; From Cape Town to Bulawayo, 193; Diamond Fields, 201; The Rand, 307; The Switzerland of South Africa, 331; Blacks and Whites, 361; The Dutch and the English, 394, 473; Material Resources, 448.

The Congo. *H. M. Stanley.* (2 vols. Harpers'.) — Vol. I.: Political History of Congo Land, 9; Dutch Factories on Congo, 81; Boma, 96; New Town Vivi, 109, 140; Making a Road up the River around the Cataracts, 195; Stanley Pool, 281; Signal of the Gong, 339; Discovery of Lake Leopold II. up the Kiva, 410; Founding of Leopoldville near Stanley Pool, 357. Vol. II. (much more valuable and interesting); Scenery of the Upper Congo, 5; Luxuriant Tropical Scenes, 91; Skill in Metal-working, 111; Enormous Flotilla of Canoes, 137; Arab Captives, 145; Stanley Falls, 155; Binnie appointed, 165; Climate (two chapters), 280, 312; The Chief Points, 339.

The Africander Land. *Archibald R. Colquhoun.* 1906. — Religion and the Native, 19; Educating the Native, 41; The Future of the Black Races, 104; The Boers, 139; The Private Life of the Boers, 199; The Public Life of the Boers, 228; Rhodesia, 292; The Labor Problem, 316; Farming, 266; Irrigation, 342; Education, 355; The Rand, 382.

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THROUGH MASAI LAND (Mount Kenia, etc.) *Joseph Thomson.* 1885. (Sampson Low & Co., London. Well illustrated.) — Taveta (important place), 117; Picture of Kenia, 384; Sport, 238; Monkeys, 317; Buffalo-hunting, 372; A Forest Fastness, 207; Kilimanjaro, 163, 220, 275; Two Fine Pictures of Kilimanjaro, 220, 275; Spitting, 290; Zebra, 335.

TUNIS. *Chevalier de Hesse.* 1882. (Wartegg.) — The Palaces of the Bey, 33; Army and Navy, 56; Life and Customs of Good Society in Tunis, 68; Life in a Moorish Harem, 81; Through the Bazaars, 97; Jewish Women, 124; The Environs of Tunis, 170; Habits and Life of the Berbers, 208; The Bedouins, 243; Woman's Life, 256; Gabes, 272.

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KINGDOM OF HAWAII. *C. F. G. Cumming.* (2 vols. Well illustrated.) — Vol. I.: Honolulu, 50; Hilo, 73; A Sugar Plantation, 112, 273; Kilauea Crater, 125; Descent of the Crater, 155; Coast of Hawaii, 245. Vol. II.: Hawaiian Morals, 74; History, 115; Account of the Great Eruption in 1880.

CORAL LANDS. *H. S. Cooper.* (Photos.) — Vol.I.: The Fiji Group, 18; Levuka, 61; Fiji Life, 116; Birds, etc., 194; Vegetation, 263. Vol. II.: Navigator's Islands, 1; Manners and Customs in Samoa, 11; The South-Sea Kings, 48; Pearl-fishing, 79; Turtle and Sponge Fishing, 126; The Solomon Islands, 278; The Society Islands, 282.

ISLAND LIFE. *Wallace.* (Supplement to Geographical Distribution of Animals.) — Remarkable Contrasts in the Distribution of Animals, 3; Changes of Land and Sea, 81; Life on the Azores, 238; Life on the Sandwich Islands, 298; Life on the Japan Islands, 363; Life in New Zealand, 457.

THE NEW ASTRONOMY. *S. P. Langley*, 1888. (Illustrated.) — Spots on the Sun, 1; The Sun's Surroundings, 35; The Sun's Energy, 70; The Planets and the Moon, 117; Meteors, 175; The Comets, 199; The Stars, 221.

ELEMENTARY METEOROLOGY. *Wm. M. Davis.* (Ill.) — Composition of the Atmosphere, 4; Offices of the Atmosphere, 6; Control of Temperature by the Sun, 15; Distribution of Heat, 64; Isotherms, 71; Pressure and Circulation, 77; Isobars, 89; Winds, 93–139; Dew, Frost, and Clouds, 154; Cyclonic Storms, 183; Anti-Cyclones, 217; Thunderstorms, 248; Thunder, 268; Tornadoes, 271; Waterspouts, 283; Causes of Rain, 285; Weather, 310; Weather Bureau, 319; Climate, 333.

Poems of Places.

The collection of poems made by the poet Longfellow, and called *Poems of Places* (thirty-one volumes, published by Houghton, Mifflin, & Co.; price $1.00 a volume), is a better book for children to study than some geographical textbooks. A poem which contains a little story or incident, like *Abdel-Hassan*, or *St. John* (1647); one which is

strongly descriptive, like *The Lord's-Day Gale*, or *Coral Islands;* or one which has a little humor in it, like Robert Southey's *March to Moscow*, — will arouse much interest, if read at the proper time by the teacher, or, better, by some pupil.

There is, of course, not very much time for "poetical geography;" but some of these poems, like *Kilimanjaro*, or *The Revenge*, are most excellent for declamations and readings, and can thus be utilized without any extra time. Many of these poems refer to historical themes.

An hour's study on the localities mentioned in the table of contents given in any volume named above, would be much more profitable, in our judgment, than finding the answer to most questions in a textbook.

The poets who have written the largest number of descriptive poems, and such as refer to noted places, are, —

Longfellow, Whittier, B. Taylor, Byron, Arnold, Southey, R. Browning, Trench, Scott, Felicia Hemans, Bryant, Cowper, Sigourney, Tennyson.

To show the style and appropriateness of these poems, two are given below, followed by a list of the best in each volume.

SIBERIA. By *James C. Mangon.* From *Poems of Places*, vol xx., p. 215.

In Siberia's wastes
  The ice-wind's breath
Woundeth like the toothèd steel.
Lost Siberia doth reveal
  Only blight and death.

Blight and death alone.
  No summer shines,
Night is interblent with day.
In Siberia's wastes alway
  The blood blackens, the heart pines.

In Siberia's wastes
  No tears are shed,
For they freeze within the brain.
Naught is felt but dullest pain,
  Pain acute, yet dead.

Pain as in a dream,
  When years go by
Funeral-paced, yet fugitive;
When man lives, and doth not live,
  Doth not live — nor die.

In Siberia's wastes
  Are sands and rocks.
Nothing blooms of green or soft;
But the snow-peaks rise aloft,
  And the gaunt ice-blocks.

And the exile then
  Is one with those.
They are past, and he is past;
For the sands are in his heart,
  And the killing snows.

Therefore in those wastes
  None curseth czar;
Each man's tongue is cloven
By the north blast, who heweth nigh
  With sharp scymitar.

And such doom dares
  Till, hunger-gnawn and cold-slain,
He at length sinks there;
Yet scarce more a corpse than ere
  His last breath was drawn.

THE COMING OF MONT BLANC. By *H. Morford. Poems of Places*, vol. x., p. 255.

Running along the high level
  Of Jura, wild and hard,
With the charms of the great Rhone Valley yet lingering in my eyes,
I heard the porter out calling
  The station-name "Bellegarde!"
And then, in a moment later, I saw wedded earth and skies.

A snow-bank reached to heaven,
And the clouds below its crown
Seemed shrinking off from its summit in a natural fear and awe;
Great feathery swales suggesting
The lightness of eider-down,
And held in that air-solution by nature's chemical law.

And there, but a little eastward,
Slim needles, greenly white,
Thrust up through the higher strata their points so fatal keen,
Catching and breaking and changing
The wonderful play of light,
But never losing that radiance denied to the lowlands mean.

The great white Alps, and their monarch, —
Mont Blanc, of the royal fame, —
And the Aiguillettes resplendent, that hem the robes of a king:
These were the long-sought glories
That to me that moment came;
And the hour must be far, far distant, an answering thrill to bring

It seemed as if toil and danger,
As if absence and pain and grief,
In that one supremest moment were a thousand times repaid,
Like slaking the drouth of the thirsty,
And giving the sick relief,
And allowing the tired to slumber in the cool and pleasant shade.

"Mont Blanc!" I cried; I remember
How calmer companions stared,
And looked from the carriage window to see me insanely leap:
"Mont Blanc! thy throne, Almighty!
And thine eye its brow has dared,
As we have so often dreamed in our broken prophetic sleep"

"How far away? Is it twenty,
Is it thirty, or fifty miles?"
And a pleasant voice makes answer, of a Swiss beside us there,
While her face is lit with the calmest
Of sweet, compassionate smiles,
"'Tis an hundred miles from here the great mountain heaves in air."

An hundred miles! So reach us
  At a distance beggaring thought,
The great deeds that the wise and the mighty have done to exalt our race.
So the might of the art creative,
  And the marvels it has wrought,
Outstrip the thought that is laggard, and make vassals of time and space.

Since then, by sunlight, by moonlight,
  At soft eve, and radiant morn,
I have watched the Alpine monarch, and studied his smile and frown;
Have seen moraine and glacier,
  Where ice-bound rivers are born,
And passed the spot where the avalanche comes crashing and thundering down

But he gives me no hour exultant,
  Like that when I seemed to choke,
On the wooded heights of Jura, with a pleasure akin to pain, —
When the wild white Alpine glory
  To my waiting spirit spoke;
And the scene was forever pictured on the nerves of heart and brain.

Important Poems in "Poems of Places."

North America.

New England. — Vol. XXV.: Voyage of Columbus, Samuel Rogers, 12; Our Aborigines, L. H. Sigourney, 23; The Old Continentals, Anon, 33; Snowbound, Whittier, 52; Grandmother's Story of Bunker-Hill Battle, Holmes, 107; The Dorchester Giant, Holmes, 118; The Washington Elm (Cambridge), Lowell, 126; The Cambridge Churchyard, Holmes, 129; The Village Blacksmith, Longfellow, 136; The Bridge, Longfellow, 138; The Garrison of Cape Ann, Whittier, 146; To the River Charles, Longfellow, 158; Concord Fight, Emerson, 167; The Captain's Drum (Engfield), B. F. Taylor, 197; The Wreck of the Hesperus, Longfellow, 201; The Phantom Boat, E. N. Gunnison, 204; The Wreck of Rivermouth (Hampton), Whittier, 218; Abraham Davenport (Hartford), Whittier, 230; Little Jerry, the Miller (Highgate, Vt.), Saxe, 242; The Franklin Mansion (Hopkinton, Mass.), Holmes, 248; The Wreck of the Pocahontas, Celia Thaxter, 265. Vol. XXVI.: Mount Kearsarge, Edna D. Proctor, 3; The Birds of Killingworth, Longfellow, 7; Skipper Ireson's Ride (Marblehead),

Whittier, 21; By the Seashore (Marblehead), J. W. Chadwick, 30; The Skeleton in Armor (Newport), Longfellow, 125; My Mountain (Pemigewasset, N.H.), Lucy Larcom, 156; Prayer of Agassiz (Penikese), Whittier, 160; Penikese, Thomas G. Appleton, 164; Lady Wentworth (Portsmouth), Longfellow, 206; The Letter of Marque (Shoal of Georges), C. F. Orne, 248.

Middle States. — Vol. XXVII.: Greenwood, S. M. Hagerman, 36; Horicon (Lake George), H. Morford, 85; Lake George, A. C. Coxe, 86; Hudson River, Thos. W. Parsons, 104; Avery (Niagara Falls), William D. Howells, 163; West Point, H. F. Tuckerman, 262.

Southern States. — Vol. XXVIII.: My Maryland, J. R. Randall, 3; The Slave in the Dismal Swamp, Longfellow, 67; The Gulf of Mexico, A. Chambers-Ketchum, 120; The Burial of the Dane (Gulf of Mexico), H. H. Brownell, 122; The Mount Burial (Mount Mitchell, N.C.), L. H. Sigourney, 140; Mount Vernon (Virginia), 1786, D. Humphreys, 145; Kit Carson's Ride (the Plains of Texas), J. Miller, 263.

Western States. — Vol. XXIX.: The Minnesota Water-shed, Holmes, 31; The Cañon, J. Miller, 36; Dows Flat (California), Bret Harte, 73; Plain Language from Truthful James, Bret Harte, 240; The Four Lakes of Madison (Wisconsin), Longfellow, 91; Lake Michigan, Kate Harrington, 104; On the Shores of the Tennessee, 244; Minnehaha (the Falls), Longfellow, 109; Memphis, J. T. Trowbridge, 100.

British America. — Vol. XXX.: Grande Pré (Nova Scotia), Longfellow, 30; D'Anville's Fleet (Halifax), Hunter Duvar, 34; The Montmorency Waterfall, L. E. Landon, 45; Mount Royal (Montreal), Charles Sangster, 46; The Lord's-Day Gale, Ed. C. Stedman, 91; Rapids of the Lachine, Charles Sangster, 82.

Mexico, South America, etc. — Vol. XXX.: El Palo Santo, Fr. Fuller Victor, 122; Monterey, Charles F. Hoffman, 143; Popocatapetl, William H. Lythe, 150; Crossing the Line (Ecuador) C. F Botes, 206; The Damsel of Peru, Bryant, 220; Rio Janeiro (Brazil), J. D. Lang, 226; Gan-Eden, Queen of the Antilles (Cuba), Mary B. Clarke, 236; El Paseo (Havana), Thomas Durfee, 252.

Africa.

Vol. XXIV. — Africa, Maria Lowell, 17; The African Chief, Bryant, 14; The Egyptian Princess, Ed. Arnold, 72; To an Egyptian Mummy, H. Smith, 81; The Sphinx and the Pyramids, George Wilson, 112; Marguerite of France, Felicia Hemans, 140; Kilimandjaro, B. Taylor, 241; The Lion Hunt, Thomas Pringle, 234; Thebes, S. G. W. Benjamin, 196.

Asia.

Vol. XXII. — Santa Filomena (Scutari), Longfellow, 76; Vision of Belshazzar, Byron, 118; The Leap of Roushan Beg, Longfellow, 161; The Arab to the Palm, B. Taylor, 177; Abdel-Hassan, Anon., 201; The Date-Garden of the Desert, George B. Griffith, 214; The Rock in El Ghor (Petra), Whittier, 219; Clyté, Walter Thornbury, 20. Vol. XXIII.: Hindoostan, W. M. Praed, 70; The Banian-tree, Robert Southey, 76; The Palm-tree, Whittier, 67; The Taj Mahal, Anon., 85; The Vale of Cashmere, Thomas Moore, 98; The Pipes of Lucknow, Whittier, 163; The White Elephant, H. Heine, 187; The Porcelain Tower (Nankin) Longfellow, 215; Japan, Longfellow, 239. Vol. XXI.: The Mosque, Lord Houghton, 9; Allah, S. A. Mahlmame, 13; The Three Kings, Longfellow, 67; Nebo, Fr. Freiligrath, 201; The Burial of Moses, C. F. Alexander, 207; The Cities of the Plain, Whittier, 228.

Europe.

Austria. — Vol. XVI.: Bregenz, A. A. Proctor, 192.

Belgium. — Vol. XV.: The Great Bell Roland (Ghent), Tilton, 186; The Field of Waterloo, Scott, 208.

Denmark. — Vol. XV.: From Ghent to Aix, R. Browning, 173; Bruges, Longfellow, 147.

France. — Vol. X.: France, O. Goldsmith, 1; Arles, F. Mistral, 37; The Descent of the Rhone, R. C. Trench, **Vol. X, 114.**

Great Britain. — Vol. II.: The Wishing Gate (Grasmere), Wordsworth, 17; Wordsworth's Grave, James Payn, 22; The Schoolmistress, William Shenstone, 32; Kenilworth, The Ivy of, F. Hemans, 67; The High Tide on the Coast of Lincolnshire, Jean Ingelow, 90; The Mersey (Liverpool), B. R. Parker, 105; Sir Richard Whittington,

Anon., 131; Poets' Corner (London), R. Leighton, 143; St. James Street, Fr. Locke, 163; Temple Bar, W. Thornbury, 168; Tavern Signs, British Apollo, 172; Misadventures at Margate, R. H. Barham, 210. Vol. III.: The Well of St. Keyne, Southey, 113; Robin Hood, M. Drayton, 143; Stratford-on-Avon at Night, H. G. Bell, 195; In Swanage Bay, D. M. M. Craik, 214; Thames, I. C. Knox, 236; Loss of the Royal George, Cowper, 168.

Scotland. — Vol. VI.: Caledonia, Scott, 1; Tam o' Shanter, Burns, 33; Bannockburn, Burns, 73; Ben Lomond, Campbell, 83; Edinburgh, Burns, 201.

Germany. — Vol. XVII.: Bingen, Mrs. Norton, 46; The Breslau Bell Founder, W. Müller, 65; The Pied Piper of Hamelin, Robert Browning, 111; Nuremberg, Longfellow, 241.

Italy. — Vol. XI.: Farewell to Italy, Anna Jameson, 47; Amalfi, Longfellow, 54; Old Pictures in Florence, Robert Browning, 154; Naples, Samuel Rogers, 259. Vol. XII.: Pisa, Thomas W. Parsons, 37; The City of My Love (Rome), J. W. Howe, 117; Horatius at at the Bridge, Macaulay, 130: The Roman Carnival, Charles P. Cranch, 182.

Russia. — Vol. XX.: Charge of the Light Brigade, Tennyson; The March to Moscow, Robert Southey, 78; A Thousand Years (Novgorod), Bayard Taylor, 102; The Volga, Edna Dean Proctor, 153; A Song of the Camp (Sevastopol), Bayard Taylor, 118; America to Russia, O. W. Holmes, 1.

Spain (and Portugal). — Vols. XIV. and XV.: The Earthquake of Lisbon, 1755, Holmes, 107; Castles in Spain, Longfellow, 25; Gibralter, Miss L. E. Landon, 134; The Alhambra, Felicia Hemans, 163; Columbus before the University of Salamanca, L. H. Sigourney, 225; The Bull Fight, Byron, 19.

Switzerland. — Vol. XVI.: My Alpenstock, H. G. Bell, 12; Berne, M. Arnold, 36; Lake Leman and Chillon, H. Morford, 44; Pilatus Mount, E. Arnold, 116; Song of St. Bernard, T. B. Read, 126; The Death of Winkelried, W. Thornbury, 154.

Oceanica.

Vol. XXXI. — Widderin's Race (Australia), P. H. Hayne, 18; Pitcairn's Island, Bryant, 65; The Revenge (Azores), Tennyson, 73; Teneriffe, S. G. W. Benjamin, 89; Coral Islands, Ph. G. Hamerton, 99; The Coral Grove, James G. Percival, 105; The Exhumation of Napoleon, W. W. Story; The Flamingo, S. G. W. Benjamin, 135; The Arctic Lover, Bryant, 143; Seaweed, Longfellow, 168; The Ship of the Dead, Longfellow, 170; The Sea, B. W. Procter, 191; The Flying Dutchman, J. B. O'Reilly, 226; Sir Humphrey Gilbert, Longfellow, 247; The Beach at Hilo Bay, F. Coan, 282.

Place-Names.

Children are usually interested in knowing the meaning of names, especially if there is some incident, something humorous, or some interesting historical event, connected therewith. For instance, a class is always pleased to learn that Azores means a *hawk*, and was so named because these birds once abounded on these islands; Maldives means *one thousand islands*, Laccadives *ten thousand islands*, on account of the many islands in that vicinity; Pernambuco means *the mouth of hell*, on account of the violent harbor; the Philippine Isles are named after Philip II. of Spain; Cape Verde, the *Green Cape*, was so named by Spanish sailors, on seeing the enormous baobab-trees crowning its summit; Michigan means the *weir*, or fish-trap, from its shape; and Bab-el-Mandeb signifies the *Gate of Tears*, on account of the numerous shipwrecks at that point.

If the teacher will spend a few moments in explaining a few common prefixes and suffixes, such as *burg* (a castle), *caster* (a fortress or town), *dam* (a town), *dorf* (a village), *polis* (a city), *sk* (a river), *stan* (a country), and *wich* (a

town), the children will soon be able to discover the meaning of many geographical names.

Teachers ought to take pleasure in calling the attention of the class orally to the meaning of one word, at least, in every country; and in now and then writing a few words on the board for this purpose. Helps will be found in Warren's *Common School Geography*, Blackie's *Etymological Derivations of Geography*, and Taylor's *Worlds and Places*.

Questions on a Picture.

[See p. 185.]

1. Where is Mauch Chunk?
2. For what is it noted?
3. What two or three things in the picture show this?
4. What is meant by a pen-picture?
5. Is the foreground on very high land?
6. What river is shown in the picture?
7. Why is it walled in?
8. Is the current slow, or swift?
9. What is in the river?
10. Where is the canal?
11. How is river and canal crossed?
12. On which side can you see the railroad? the station?
13. Is the valley here narrow, or broad?
14. What is represented by the smoke in the background?
15. What is shown on the right of the picture?

CHAPTER XX

GEOGRAPHICAL BOOKS

READING maketh a full man. He that reads little, needs much cunning to make him seem to know that which he does not. — *Bacon.*

CHILDREN naturally love that which is good and pure in literature The taste for what is unclean, is an acquired taste. — *Balliet.*

CHAPTER XX

GEOGRAPHICAL BOOKS

TEACHER'S LIBRARY — GEOGRAPHICAL READERS — SCIENCE FOR CHILDREN — TRAVELS FOR CHILDREN — SCIENCE FOR ADULTS — TRAVELS FOR ADULTS — BOOKS IN PAPER COVERS — GEOGRAPHICAL STORIES AND NOVELS — FRENCH AND GERMAN BOOKS — REFERENCE BOOKS — COSTLY ILLUSTRATED BOOKS

THE attempt has been made to include in this list no *worthless books*. These books have all been examined; and although there is a great difference in their value, yet each volume will prove to be, we believe, a helper to the teacher searching for something to give new interest to the geographical recitation.

The *best* books for the teacher and for his work in the schoolroom, not including the large and "costly illustrated works" given in a separate list, are placed ***first,*** in each case, under the various countries; the less valuable books are alphabetically arranged after the rule (——). An extended list is given, many more than any teacher needs to read, so that some one book at least may be found in the teacher's town library.

All the books are either of very recent publication, or still considered the standard works on that subject. Books from fifteen to twenty years of age are of little comparative value in travel or in geography. Bayard Taylor's books can no longer stand at the head.

A few comments have been added where needed. Books marked with an asterisk are analyzed under Sources of Information, in the previous chapter.

ONE THOUSAND BOOKS ON GEOGRAPHY

THE TEACHER'S GEOGRAPHICAL LIBRARY

The First Books to Purchase.

(*a*) For Work in Advanced Classes.

Ritter's Comparative Geography. American Book Company. Price $1.25. Chisholm's Commercial Geography. Price $5.

Guyot's Earth and Man. Charles Scribner's Sons. Price $1.75.

Johnston's Physical and Descriptive Geography. Edward Stanford, London. Price $2.75.

Guyot's Physical Geography. American Book Company. Price $1.60.

Sutherland's The Teaching of Geography. Scott, Foresman & Co. Price $1.00.

Prime's Around the World. Harper & Bros. Price $3.00.

Crocker's Methods of Teaching Geography. Boston School Supply Company. Price $0.60.

Patton's Natural Resources of the United States. D. Appleton & Co. Price $3.00. Redway's Commercial Geography. Price $1.25.

Parker's How to Study Geography. D. Appleton & Co. Price $1.50.

Redway's Teachers' Manual of Geography. Heath & Co. Price $0.50. Redway's New Basis of Geography. Price $1.00.

McMurry's Type Studies. Special Method, etc. Macmillan & Co.

Guyot's Common School Geography. Teacher's edition, with Teacher's Guide. American Book Company. Price $1.25.

Redway's, Frye's, King's, Dodge's, Morton's, Warren's, Common School Geographies.

(*b*) For Work in Lower Classes.

Geikie's Physical Geography. Macmillan & Co. Price $1.10.

Brown's Manual of Commerce. Bill, Nichols, & Co. Price $1.25.

Geographical Reader. American Book Company. Price $0.60.

Andrews's Seven Little Sisters, who live on the Round Ball that floats in the air. Ginn & Co. Price $0.50.

Geikie's Teaching of Geography. Macmillan & Co. Price $0.60.

Carver's How to Teach Geography. Educational Publishing Company, Boston. Price $0.25.

King's Elementary Geography. Scribner's Sons. Price $0.65.

Blakiston's Glimpses of the Earth. E. P. Dutton & Co. Price $c.80.

Jackman's Nature Study. Henry Holt & Co.

Fairbanks's Home Geography. Educational Publishing Co.

Frye's Geography with Sand Modelling. Ginn & Co. Price $1.25.

Miller's Little People of Asia. E. P. Dutton & Co. Price $2.50.

Andrews's Geographical Plays. 6 parts, 15 cents each. Lee & Shepard.

King's, Frye's, Redway's, Tarbell's, Dodge's, Primary Geographies, and Our World (1).

GEOGRAPHICAL READERS.

Standard Readers (6 vols.)	Carpenter's Readers (5 vols.)
World at Home (6 vols.)	Glimpses of the Globe — Blakiston (6 vols.)
Dunton's Readers (9 vols.)	Picturesque Readers — King (6 vols.)
London Readers — Miss Mason (5 vols.)	

NOTE. — The above Geographical Readers are all published in London, except Dunton's, Carpenter's, and King's.

SCIENCE FOR CHILDREN

ANDREWS . . .	Seven Little Sisters. Part I.
	Each and All. Part II.
	Ten Boys.
MOORE	Overhead.
NICHOLS. . . .	Underfoot.
MILLER	Little Folks in Feathers and Fur.
BUCKLEY . . .	The Winners in Life's Race.
	Life and her Children.
STWIN	Eyes Right.
KIRBY	The World at the Fireside.
	The Sea and its Wonders.
RICHARDS . . .	Four Feet, Two Feet, and No Feet.

BIART . . . . . Adventures of a Young Naturalist.
FRYE . . . . . Brooks and Brook Basins.
Child and Nature.

ABBOTT . . . . Science for the Young. 4 vols.
Heat, Light, Water, and Land Force. These books contain numerous simple experiments, readily performed by boys and girls.

MILLER . . . . In Nesting Time.
BURROUGHS . . Fresh Fields.
Sketches of Nature.
HERRICK . . . Wonders of Plant Life.
PROCTOR. . . . Easy Star Lessons.
GIBERNE. . . . Among the Stars. Illustrated.
Lessons given in a conversational style, well adapted to read to beginners.

BEARD . . . . Humor in Animals. Illustrated.
BUSH . . . . . Reindeer, Dogs, and Snowshoes.
CHAMPLIN . . . Young Folks' Astronomy.
The book contains some useful illustrations.

COOPER . . . . Animal Life in the Sea and Land. Fully illus.
COOLIDGE . . . My Household Pets.
D'ANVERS . . . Lowest Forms of Water Animals.
No. V., in "Science Ladders." There are six volumes.

DANA . . . . . The Geological Story Briefly Told.
DE VERE . . . Wonders of Vegetation.
Wonders of Water.
FARMER . . . . A Story-Book of Science. Illustrated.
Very fine illustrations, and the text well adapted for children.

GOSSE . . . . . Romance of Natural History.
HEADLEY . . . Mountain Adventures.
———— . . . . Half-Hours Underground. Illustrated.
Volcanoes and earthquakes are well described and illustrated.

HALL . . . . . Animal Sagacity.
Contains many anecdotes of animals.

HAMERTON . . . Chapters on Animals.
HOLDER . . . . Marvels of Animal Life. Illustrated.
In the Polar Regions. Illustrated.
In the Temperate Regions. Illustrated.
HOPKINS . . . Natural History Plays.
Handbook of the Earth.

KINGSLEY . . . Madam How and Lady Why.
PRANG . . . . Natural History Series.
NORWOOD . . Facts and Phases of Animal Life.
MEYER . . . Real Fairy Folks.
Science made plain for the youngest children.

NORTHROP . . . Earth, Sea, and Sky. Illustrated.
STEPHENSON . . Boys and Girls in Biology.
TAYLOR . . . . Half-Hours at the Seaside.
TENNEY (Mrs.) . Young Folks' Pictures and Stories of Animals. 6 parts.
TREAT . . . . My Garden Pets.
About Spiders, Ants, etc.
VAN DERVOORT . The Water World. Illustrated.
WOLLF . . . . Wild Animals.
WOOD . . . . Out of Doors.
Natural History.
Popular Natural History.
The Dwellers in our Gardens.
Strange Dwellings. Fully illustrated.
YONGE . . . . Little Lucy's Wonderful Globe.

TRAVELS FOR CHILDREN

KNOX . . . . . Boy Travellers. Asia. 8 parts.
The Boy Travellers on the Congo. Fully illus.
HALE . . . . . Family Flights. 5 vols.
Through Mexico; Around Home; Over Egypt; Through Spain; Through France.
MCCABE . . . . Our Young Folks in Africa.
Our Young Folks Abroad.
MILLER . . . . Little People of Asia.
AYRTON . . . . Child-Life in Japan.
HAYES . . . . Cast Away in the Cold.
DODGE . . . . Hans Brinker, Holland.
WARDMAN . . . A Trip to Alaska.
BUTTERWORTH . Zigzag Journeys. 7 vols.
In the Levant; In Arcadia; In Northern Lands; In the Occident; In the Orient; In Classic Lands; In Europe.
These books contain more history than geography, compared with some other juveniles; but the pictures are always genuine views of localities, and many romantic stories and traditions of persons and places are woven into the description.

ABBOTT . . . . Marco Paul's Voyages and Travels. 6 vols.
In New York; On the Erie Canal; In the Forests of Maine; In Vermont; In Boston; At the Springfield Armory.
Written for Young Children, but imparting much information of the scenery and customs of these sections.

ABBOTT . . . . Rollo Books.
CUMMING . . . Hunting: South Africa.
ANDERSEN . . . Rambles in the Hartz Mountains.
BUSH . . . . . Reindeer, Dogs, and Snowshoes.
CHAMPNEY . . . Three Vassar Girls. 5 vols.
CROWNINSHIELD . All among the Lighthouses.
A story about the coast of Maine.

CAMPBELL . . . Old Forest Ranger.
Describes wild sports in India on the Neilgherry Hills and in the Jungles.

DALL . . . . . Patty Gray's Journey to the Cotton-islands.
FARRAR . . . . Eastward Ho!
Wild Woods Life.
A trip of Boston boys to Northern Maine.

Down the West Branch.
Up the North Branch.
FOGG . . . . . Land of the Arabian Nights.
FRENCH . . . . Our Boys in India.
Our Boys in China.
GEDDIE . . . . Beyond the Himalayas.
GRACE GREENWOOD and HARRIET MARTINEAU'S Books.
GREEY . . . . Young Americans in Japan.
Young Americans in the Wonderful City of Tokio.
Young Americans among the Bear Worshippers.
HALL . . . . . Adrift in the Ice-Fields.
Drifting Round the World.
HIELD . . . . Glimpses of South America.
This is a small book, but very interesting and helpful for the school-room.

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OCEANICA

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Australian Handbook.
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BOOKS IN PAPER COVERS

A small list of books of travel, in paper covers, is added, with price and publisher, for the benefit of teachers who have no ready access to public libraries. These books can be ordered by mail, the money being sent in postage-stamps.

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STRAHORN . . . To the Rockies and Beyond. The New West Publishing Company, Omaha. 50 cts.
BALLANTYNE . . Erling, the Bold. Lovell & Co. 20 cts.
ROBINSON . . . Under the Sun. Roberts Brothers. 50 cts.
BUCKINGHAM . . Observations upon the Korean Coast, Japanese-Korean Ports, and Siberia. Office of Bureau of Navigation, Navy Department.

GEOGRAPHICAL STORIES AND NOVELS

Many of our best novels describe very accurately the people of the country in which the scene of the story is laid, as, for instance, *Middlemarch*, by George Eliot; others describe both the people and the scenery of the country, as Black's *Princess of Thule*. Many juvenile stories describe accurately some country, as Ballantyne's *Black Ivory*. A list of such stories is given below, for some children can only become interested in travel by the help of the romantic. The teacher should use good judgment in recommending this course of reading, and guard it carefully against abuse. No child should be permitted to read more than one story a term.

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NOTE. — † Excellent juvenile stories.

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Every-day life in the wilds of North America.

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Describes Dr. Kane's expedition.

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Young fur-traders.

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Whaling adventures.

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HUETT . . . . Morgan, the Buccaneer.
Freebooters in the Antilles.

MACY . . . . . The Log of the Arethusa.
Actual life on the ocean.

JACKSON (HELEN), Romona.
The Indian question, and California scenery.

HAWTHORNE . . Love, or a Name.
Workings of New-York City politics.

HOLBROOK . . . Ten Years among the Mail-Bags.

PHELPS (Miss) . . The Silent Partner.

BELLAMY . . . The Breton Mills.
Strife between labor and capital.

CRAWFORD . . . An American Politician.

ALDEN . . . . Four Girls at Chautauqua.†

EGGLESTON . . . Circuit Rider.

HALE . . . . . Ten Times One is Ten.

BOLTON . . . . The Present Problem.

TRIPP . . . . . Student-Life at Harvard.

HOWARD. . . . Donald's School-days.†

BORDEEN . . . Roderick Hume.

HOWELLS . . . Their Wedding Journey.

HART . . . . . Miriam Coffin.
Whaling and sea life.

BUTLER . . . . Red Cloud.
A story of the great prairie.

TAYLOR . . . . The Story of Kennett.
Country life among Friends in Pennsylvania.

KINSMAN . . . Cadet-Life at West Point.
BURNETT (Mrs.) . Through One Administration.
EGGLESTON . . . The Hoosier School-master.
COOPER . . . . Leather Stocking Tales.
Descriptions of Indian character and habits.
MATHEWS . . . Enchanted Moccasins.
Authentic legends of American Indians.
RUSSELL . . . . The Frozen Pirate.
The scene is laid in the Antarctic Ocean, and describes very vividly polar life.
The Wreck of the Grosvenor.
A charming sea-story.
ELIOT . . . . . Middlemarch.
English life fully described.
BROOKS . . . . The Boy Emigrants.†
Overland travel to California.
CABLE . . . . The Grandissimes.
A story of Creole life.
KINGSTON . . . In the Wilds of Florida.
THORPE . . . . The Hive of the "Bee Hunter."
IMLAY. . . . . The Emigrants.
Banditti of the Prairies.
HALL . . . . . Legends of the West.
ROBB . . . . . Western Border-Life.†
PYRNELLE . . . Diddie, Dumps, and Tot.†
Plantation child-life.
FARRAR . . . . Eastward Ho!†
A trip of Boston boys to the wilds of Maine.
HIGGINSON . . . Malbone.
Describes Newport life.
SCHWATKA . . . The Children of the Cold.†
Life in the Arctic regions.
BALLANTYNE . . The Dog Crusoe.†
Describes prairie-life.
The Golden Dream.†
Adventures in the Far West.
THACKERAY . . The Virginians.
Scenes in London and Virginia.
WELLCOME . . . The Story of Mellakahtla.
An account of the work of William Duncan's work among a savage tribe of Indians in British Columbia.

WINTHROP . . . John Brent.
Excellent description of Rocky-Mountain scenery.

IRVING . . . . Captain Bonneville.

UNDERWOOD . . Lord of Himself.
Describes Kentucky.

A Lady's Ranch-Life in Montana. 1887.
Interesting letters of her life, roughing it in the Far West.

BALLANTYNE . . Man on the Ocean.†
This book describes for boys the different kinds of ocean-craft, from a raft, to the "Great Eastern."

DANA . . . . . Two Years Before the Mast.†

STODDARD . . . Two Arrows.†
A charming Indian story for boys.

Europe.

HOWELLS . . . Venetian Life.
Delightful pictures of social and commercial life in Venice.

BALLANTYNE . . Chasing the Sun.†
Rambles in Norway.

SCOTT . . . . . The Pirate.
Picture of life in the Orkneys.

Anne of Geierstein.
Contains a description of Swiss scenery, although Scott had never visited Switzerland.

A Legend of Montrose.
The scene is near the Trossachs, Scotland.

Rob Roy.
Contrasts the wild Highland life with that of Glasgow.

The Heart of Mid-Lothian.
The scene is mostly in Scotland.

TOLSTOI . . . . Anna Karénina.
Describes Russian life.

France.

LONGFELLOW . . Outre-Mer.

THACKERAY . . The Village on the Cliff.

ELLIS . . . . . Marie.

SIKES . . . . . Chateau Frissoe.

MONCRIEF . . . The Lycee Boys.†
French School-life.

DE WITT . . . Motherless.†

BULWER . . . . The Parisians.
KIMBALL . . . Romance of Student-life Abroad.
MUSGRAVE . . . Ten Days in a French Parsonage.
WILLIAMSON . . The Lightning Conductor.

England.

ADAMS . . . . School-days at Kingscourt.
MITFORD . . . Our Village.
JAMES . . . . . The Smuggler.
GWYNNE . . . School for Fathers.
CAMBRIDGE . . The Three Miss Kings.
Life in Australia.
Fox Hunting.
MARSHALL . . . Monsell Digby.
Country life in a manufacturing district.
EGAN . . . . . Life in London.
ELIOT . . . . . Adam Bede.
IRVING . . . . Bracebridge Hall.
BALLANTYNE . . Deep Down.†
A story of life among the mines of Cornish.
BLACK . . . . . A Princess of Thule.
Macleod of Dare.
Vivid descriptions of scenery, life, and manners among the Scotch.
AGUILAR . . . . Home Influence.†
Describes beautifully a happy English home under the best of influences.
BLACKMORE . . Mary Anerley.
Describes the coast of England and smuggling operations.
BESANT . . . . Armorel of Lyonesse.
Life on the Scilly Islands.

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KINGSTON . . . On the Banks of the Amazon.
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MONCRIEF . . . The Pampas.
Adventures in the Argentine Republic.
REID . . . . . Afloat in the Forest.
BALLANTYNE . . Martin Rattler.†
A boy's adventures in the forests of Brazil.

Central America.

KINGSLEY . . . Westward Ho!
BADEAU . . . . Conspiracy.
Spanish diplomacy and American politics.
VICTOR . . . . Last Days of Tul.
Lost Cities of Yucatan.
WARBURTON . . Darien.
Buccaneers of Spanish Main.
Mexico.
WALLACE . . . The Fair God.
BIART . . . . . Adventures of a Young Naturalist.†
OBER . . . . . The Silver City.
The scene of this story is laid in Central America.

Africa.

EBERS. . . . . An Egyptian Princess.
Describes very accurately life in Egypt long ago.
The Bride of the Nile.
Uarda.
Serapis.
HAGGARD . . . Jess.
This story describes scenes and events among the Kafirs in South Africa. It is a plain, simple story, and quite different from others by the same author.
VERNE . . . . Five Weeks in a Balloon.
Discoveries in Africa by three Englishmen.
RALPH IRON . . The Story of an African Farm.
Scenes in South Africa.

FRENCH AND GERMAN WORKS

Some of the best books of travel are published every year by the French and Germans. A few of the choicest and most recent are catalogued below. All of these books can be found under their author's name in the Bates Hall of the Boston Public Library.

French.

DELAPORTE . . . Voyage au Cambodge. Fine illustrations.
PIASSETSKY . . . Voyage à Travers la Mongolie et la Chine.
A full account, with sketches, of a journey from Kiachta through Mongolia to Peking, and other places in China.

COTTEAU . . . . Un Touriste dans l'Extrême Orient.
The author describes his visits to the great cities of Japan, China, and Indo-China.

RÉCLUS . . . . Nouvelle Géographie Universelle de l'Afrique Occidentale, Archipels, Atlantique, etc. 1887.
Histoire d'une Montagne.
La Terre à Vol d'Oiseau. Illustrated.
France, Algérie, et Colonie. Illustrated.
Voyage aux Régions Minières de la Transylvanie Occidentale.

MONTANO . . . Voyage aux Philippines et en Malaisie.
A welcome addition to our knowledge of an interesting island-group.

MOSER. . . . . A Travers l'Asie Centrale.
It deals largely with the Khirgiz, Turkomans, and other native races.

LE BRUN-RENAUD, Les Possessions Françaises de l'Afrique Occidentale. 1886.

LEROY-BEAULIEU . L'Algérie et la Tunisie. 1887.

VIGNON . . . . La France dans l'Afrique du Nord.

FONCIN . . . . Géographie Générale. 1888.
This geography conveys broad views of the subject, and keeps in mind the intimate relation between physical and political geography.

LE BON . . . . Les Civilisations de l'Inde. Illustrated. 1887.

JACOLLIOT . . . Voyage aux Pays Mystérieux.

CERESOLE . . . Legendes des Alpes Vaudoises. Illustrated.

BRERSON . . . . Bolivia: Sept Années d'Explorations.

VAUJANY . . . . Alexandrie et la Basse-Égypte. Illustrated.

HUEBNER . . . A Travers l'Empire Britannique. 2 vols.

MORAES . . . . Africa Occidental, Album.
An album of photo-lithographs taken in South-western Africa. The views are well chosen, and represent the scenery, types of natives, etc.

WAUTERS . . . Le Congo au Point de Vue Économique.
The author gives a geographical account of the Congo State and neighboring regions.

WOUVERMANS . . Libéria, Histoire de la Fondation d'un État Nègre Libre.
A rosy picture of the Negro state.

MANHEIMER . . Du Cap au Zambéze.

German.

HEYFELDER . . . Transkaspien und seine Eisenbahn. 1888.

GÜRSFELDT . . . Reise in den Andes von Chile und Argentinien. 1888.

A valuable book describing a careful exploration of the South American Cordilleras between 32° and 35° S. Lat. The author ascended from Santiago.

SCHMIDT . . . . Sansibar. Ein ostafrikanisches Culturbild. 1888.

The author describes the town, the houses, and the people. It is the most recent book on the island.

EGLI . . . . Geschichte der geographischen Namenkunde. 1886.

FINSCH . . . . Ueber Bekleidung, Schmuck, und Tatowirung der Papuos der Südostküste von Neu Guinea.

ZOLLER . . . . Forschungsreisen in der deutschen Colonie Kamerun. 3 vols.

These volumes describe the German possessions in West Africa.

PAULITSCHKE . . Die Sudanländer nach den gegenwärtigen Stande der Kenntniss.

An instructive *résumé* of the whole Sudan region.

NORDENSKIÖLD . Grönland.

It gives an account of the journeys into the interior of Greenland between 68° and 69° N.

LINDAU . . . . Aus der Neuen Welt.

HEIM . . . . . Handbuch der Gletscherkunde.

Gives scientific theories, facts, and observations concerning glaciers. Professor Heim is the professor of geology in the Swiss Polytechnic and University of Zurich.

——— . . . . . Die Balearen. Fully illustrated.

Contains the most charming illustrations, giving a complete idea of the physical aspects of the country.

LENZ . . . . . Timbuktu. Reise durch Marokko, die Sahara und den Sudan, etc. Illustrated.

LOEWENBERG . . Geschichte der geographischen Entdeckungsreisen.

ZAFFAUK . . . . Die Erdrinde und ihre Formen. 1885.

REFERENCE BOOKS

Bartholomew's *Imperial Atlas and Gazetteer of the World.*

Census of the United States (1900). 12 vols.

Chisholm's *Handbook of Commercial Geography* (1905).

Compendium of Geography (6 vols. illus.). Price $6 per vol. Published by Stanford, London. (1895–1903.)

Dictionary of Altitudes, by Henry Gannett. (1906.) Washington, D.C.

Encyclopedia of Canada. 5 vols.

Etymological Derivations of Geography. Blackie.

Findlay's *Dictionary of the Oceans.* 3 vols.

Gazetteer of the Philippine Islands. Sullivan. (1900.) 2 vols. Washington, D.C.

Gazetteer of the World. Published by Lippincott & Co. Price, $10.

General Dictionary of Geography. Chisholm. Published by Longmans, London.

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RECREATION QUESTIONS IN GEOGRAPHY, FOR LEISURE MOMENTS

1. What is an isobar?
2. What is an isotherm?
3. How are winds named?
4. Why is Cape Horn so called?
5. Does one feel warmer at the top, or bottom, of a hill?
6. When are dog-days, and why so called?
7. Do the moon and sun rise in the same place?
8. What country contains the most coal?
9. Which are older, the rivers of Florida or those of Massachusetts?
10. What is a tidal wave?
11. How can delicate organisms exist under the enormous pressure at great depths of the sea?
12. In what kind of rocks are fossils found?
13. Is snow ever seen in the tropics?
14. What is the snow line?
15. Where is the *Height of Land?*
16. What is the difference between mosses and lichens?
17. Are there many glaciers within the Arctic circle?
18. Does dew *fall* like rain?
19. What is the difference between sand and loam?
20. Where is cannel coal found, and for what is it used?
21. How did the discovery of natural gas change the habits of the people of a certain city?
22. Which has more population, New York City or the State of Maine?
23. What is meant by long-distance telephone?
24. Along what river in this country are there mountains of stratified *rock-salt?* (Snake River.)
25. Where is the Hyperborean Sea?
26. Define mesas and buttes.
27. Where is the "Garden of the Gods"?

28. Where is the longest tunnel in the world? the longest canal?

29. Who wrote "Three Years of Service"?

30. Name a good geographical novel.

31. What is the difference between oceanic and continental islands?

32. Along what parallel has the great belt of civilization moved?

33. What country was the "world's eldest born"? (Egypt.)

34. Is there any difference between the arctic and antarctic regions?

35. How can you best place a school globe so as to see at a glance the pyramidal southern projections of several masses of land and the vastness of the oceans?

36. Who was Malte Brun?

37. What Eastern State has seventeen hundred lakes, each not less in size than one square mile?

38. What is the meaning of these geographical names? Norwich, Hampton, Bradford, Deerfield, Pittsburg, Winchester, Connecticut, Missouri, Saybrook.

39. Who are our antipodes?

40 What is the nadir?

41. Can we see light as it passes through the sky?

42. How high can a balloon rise?

43. Why is silk-raising more profitable in Italy or California than on the same parallel in the eastern part of the United States?

44. Where does Lehigh coal come from?

45. What minerals are almost entirely wanting in the United States?

46. Who wrote "Natural Resources of the United States"?

47. Where is the "lead" in our pencils mined?

48. Does all the sun's heat reach the earth's surface?

49. For what are Syracuse and Saginaw noted?

50. What is the difference in height between Denver and Mount Washington?

51. Where are all the millions of slate-pencils made? (Castleton, Vt.)

52. Why are the following capes so named? Verde, Blanco, Good Hope, Farewell, Finisterre, Cod, St. Roque, Henry, Charles, and Barrows.

53. Where is the "Comstock Lode"?

54. What difference would it make in the climate of the United States if the mountain ranges ran east and west?

55. Does a ship go to Europe any quicker than it returns?

56. Where in the United States do most of the storms originate?

57. For what is kaolin used?

58. Of what special use are the mountains of the United States?

59. Where is the centre of the United States, including Alaska?

60. For what common metal is the Etta mine in the Black Hills noted? (Tin.)

61. What city in this country employs ten thousand persons to make 4,500,000 collars and cuffs each year? (Troy.)

62. About when are the three hottest days each year east of the Mississippi? (July 12–17.)

63. Is Omaha in the eastern or western half of the United States?

64. The number of miles of railway in the United States would go round the globe how many times?

65. What range of mountains in this country is noted for four distinct uses?

66. What fractional part of the United States is east of the Mississippi River, exclusive of Alaska?

67. What three towns are due north of your own, named in order of nearness?

68. In what direction do you usually see a rainbow? Why?

69. What is the difference between a picture and a map?

70. What five powers have the most territory?

71. What two insects are extensively reared in Europe?

72. Where is "Grandfather Mountain"?

73. How many days does it take for a letter to go from London to Bombay? (16 days, 17 hours.)

74. What countries in the world are republics?

75. Name in order of value the mining industries of the United States.

76. Where are glass bottles made?

77. What section produces the most silver?

78. Does France export or import wheat?

79. How many Indians are there in the United States?

80. What people of Asia are nomadic?

81. Where are pouch-bearing animals abundant?

82. What are atolls?

83. Where are the Moluccas?

84. What State in the United States is the same size as Borneo?

85. What is the standard width of railroad tracks?

86. In what country do the leaves turn their edges towards the sun?

87. Do people in passing turn out to the right in all English-speaking countries?

88. Where is there the greatest fall of rain, — in Vera Cruz, or California? (183 inches and 19 inches general average.)

89. Who are the Gauchos?

90. Where is the Doge's palace?

91. What country has a Grand Lama? an Ameer? a Khedive? a Khan? a Viceroy?

92. What grand division is the "Country of *Beginnings*"?

93. Which race is the most numerous?

94. What are the "Continents of History"?

95. What is *hennequen*, and where does it abound?

96. Where is "the roof of the world"?

97. Where is "the land of the midnight sun"?

98. Where are the Lesser Antilles?

99. What different countries have been partitioned?

100. Is the whistle of the locomotive heard to-day within the Arctic Circle? (Yes, in Northern Sweden.)

101. Where is the exact antipodes of Boston?

102. What monument is imitated by the Washington Monument in respect to relative size of base and height?

103. How does the nearest steeple compare in height and size with the big trees of California?

104. What people have homes not as clean as their neighbors the birds and the bees?

105. In what place in the world is there no sear or yellow leaf? (Penang.)

INDEX

An index is a necessary implement. Without this a large author is but a labyrinth without a clew to direct the reader therein.

Dr. Fuller.

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